

**Breaking the Ice: Developing a Model of Expeditioner and Partner  
Adaptation to Antarctic Employment**

by

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21<sup>st</sup> May, 2010

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## ABSTRACT

Existing research on the psychological issues that affect returning Antarctic expeditioners testifies to the coexistence of both positive and negative outcomes derived from their experience 'on the ice'. However the predominant focus of such research has been limited to adjustment outcomes rather than the processes that underlie adaptation - processes which are likely to include individual coping mechanisms, organisational demands, and family functioning patterns. Identification of the salient predictors of resilience and adaptation enables intervention strategies to focus on enhancing this capacity throughout the employment experience.

Adopting a salutogenic perspective, the present study investigated the experience of Antarctic employment for single expeditioners, partnered expeditioners, and partners from pre-departure through to reintegration in an effort to identify factors which facilitate positive and negative adaptation. This was achieved through: 1) Identifying factors that promote psychological resilience and adaptation in Antarctic expeditioners and describing their relationship to positive and negative change arising from the expedition experience; 2) Identifying factors that promote psychological resilience and adaptation in Antarctic expeditioners partners and describing their relationship to positive and negative change arising from the separation experience; and 3) Describing the quality and nature of the reintegration experience by comparing the processes and outcomes of each of the above, and their implications for the process of reintegration over a 12 month period. An additional aim of the present research was to investigate the impact of a shift from ship to air-based personnel movement in Australian Antarctic populations.

Eligible participants were those undertaking a minimum employment period of three consecutive months. The sample incorporated within the present study comprised 141 single expeditioners and 282 partnered expeditioners recruited from the Australian Antarctic program during the 2005/2006, 2006/2007, and 2007/2008 seasons. In order to obtain a more

comprehensive understanding of experience of the pre-departure period upon existing intimate relationships, 149 partners of the recruited expeditioners also participated in this study. To enable comprehensive assessment and understanding of the independent and interdependent nature of experiences across Antarctic employment and how these contribute to resilience and adaptation, data was collected across four stages of the Antarctic employment experience according to the following schedule: *Stage One*: Prior to departure; *Stage Two*: During the Antarctic absence; *Stage Three*: Two months post-return to Australia; *Stage Four*: Twelve months post-return to Australia.

Results identified that compared to partners, both single and partnered expeditioners reported significantly higher quantitative and qualitative levels of well-being and indices of adaptation at all time points except reunion. Furthermore, there was little differentiation between single and partnered expeditioners on both quantitative and qualitative measures, nor between those who experienced ship versus air-based return to Australia. A consistent result demonstrated throughout the research studies was the multidimensional nature of factors influencing adaptation for all participant categories throughout all phases of the employment experience. These factors spanned individual, organisational, and relationship level factors as well as demonstrated interrelationships between experiences at each phase of employment enabling a model to be developed integrating these factors as they relate to resilience and adaptation.

Results of the current research are unique in that they provide a comprehensive understanding of both the outcomes associated with positive adaptation within single expeditioners, partnered expeditioners, and partners, as well as the mechanisms which underpin these. In this way, results of the present research identify areas for proactive intervention programs and training to maximise positive adaptation outcomes that in turn enhance employee well-being, performance, and retention.

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## CHAPTER ONE

### LIVING AND WORKING IN ANTARCTICA

## 1.1 The Antarctic Environment

Antarctica is frequently cited as the coldest, driest, windiest, and highest continent on Earth. Average annual temperatures range from -10° Celsius on the coast to -60° Celsius at the interior (Australian Antarctic Division, 2009a). These frigid air temperatures limit precipitation to approximately 200-1000 millimetres per annum (of which most is snow), rendering Antarctica the world's largest desert (British Antarctic Survey (BAS), 2007). Further compounding the effects of the cold dry climate are fierce katabatic winds, particularly in coastal regions where they reach an average speed of 40 kilometres per hour and have been recorded at speeds of 327 kilometres per hour (AAD, 2009b).

The nature of this environment renders it impossible to sustain human life without the aid of technology and complex operations, and its geographic isolation limits the availability of external assistance in medical and other emergencies (Decamps & Rosnet, 2005; Lugg, 2005). Challenges associated with the physical environment, climate, and geographic isolation inherent within Antarctica increase the risk of injury or even death to those who reside there (Palinkas & Suedfeld, 2007). For these reasons Antarctica has further been identified as one of the most extreme and unusual environments on Earth (Suedfeld, 1991). In addition to the physical risks and demands placed on those working in this environment, Antarctica also poses additional and unusual social and psychological challenges for expeditioners which need to be negotiated to enable adaptation to occur.

### *Antarctica as an Extreme and Unusual Environment (EUE)*

Extreme and unusual environments (EUEs) are those which pose extraordinary physical, technological, social, and psychological challenges for individuals who inhabit them and require significant, complex, and deliberate action for successful adaptation and



performance (Barnett & Kring, 2003; Kanas & Manzey, 2003; Suedfeld, 1991; Suedfeld & Mocellin, 1987). The previously identified characteristics of the Antarctic environment clearly fulfil these criteria.

It has been proposed that EUEs can be principally defined according to physical, psychological, and social/interactive parameters (Suedfeld, 1991). Physical characteristics of an environment that contribute to classification as an EUE significantly deviate from those required for optimal human functioning, and within the Antarctic environment specifically relate to temperature and humidity; light-dark cycles; availability of basic necessities such as food, water, and shelter; and the landscape itself (Suedfeld). In short, the physical parameters of the environment are significantly removed from those required for optimal human performance and survival (Suedfeld & Steel, 2000) and are significantly removed from the routine experience of most human communities (Suedfeld & Steel). The nature of environments such as Antarctica and the extremes of human performance demonstrated within them means that the psychological, social, and physiological experiences of people residing there can be studied nowhere else (Fiennes, 1993; Rachman, 1984; Segal, 1986; Suedfeld, 1998). For this reason, EUEs such as Antarctica have been referred to as 'natural laboratories' for the study of human health and performance under physical, psychological, and environmental stress (Shurley, 1974; Gunderson, 1974; Suedfeld, 1998).

Psychological parameters associated with EUEs relate more to individual perceptions and responses to the environment, as opposed to the environment itself. Although there are some EUEs (such as Antarctica) which people are likely to find intrinsically challenging, the specific experience within EUEs can differ between individuals residing within the same environment (Levine & Ursin, 1991; Sandal, Leon, & Palinkas, 2006) and may relate to differences in self-perception, preparedness for the experience, personality characteristics, and motivation (Suedfeld, 1991). Therefore it has been argued that these differences are not

directly influenced by the environment itself, but the meaning the individual attributes to their experience (Levine & Ursin). Individual perceptions and responses may also be influenced by social/interactive parameters including group cohesiveness, leadership, and structure (Suedfeld).

Social/interactive parameters of an environment that contribute to its classification as an EUE are primarily associated with the degree of person-environment fit (Suedfeld, 1991). In addition to the level of perceived control over the experience (Suedfeld) factors that influence this experience in Antarctica include the availability of and familiarity with communication technologies (Suedfeld) such as email. The availability of and satisfaction with interpersonal interactions particularly during the Austral Winter when environmental conditions restrict movement beyond station confines which limits opportunities to regulate social interactions (Carrere & Evans, 1994; Lugg, 2004).

Another factor influencing the experience of social/interactive parameters may relate to the availability of and satisfaction with pre-existing support networks (i.e. family and friends) that can help shape perceptions of the environment as well as expeditioners' general orientation towards life. This is an important consideration when investigating the processes of psychological adaptation and resilience and their relationship to positive and negative change within Antarctic populations. To date this component of experience has been largely overlooked and represents an important opportunity for growth within the field of Antarctic Psychology.

#### *Antarctica as an Isolated and Confined Environment (ICE)*

Isolated and Confined Environments (ICEs) are environments in which the challenges associated with sustaining human life in extreme and unusual environments are further compounded by physical, psychological, and/or social isolation and confinement within a specific

geographic location (Suedfeld & Steel, 2000). Due to physical and geographic isolation, ICEs cannot be easily entered or exited even in medical or other emergencies (Decamps & Rosnet, 2005; Lugg, 2004). Furthermore all vocational, social, recreational, and personal activities occur within a restricted physical space (Suedfeld, 1998). This is in contrast to more routine environments in which individuals can separate the different aspects of their identity by both physical and temporal demarcations.

Thus in addition to the hostile physical environment, there are psychological and social challenges associated with repeated interactions between individuals of diverse backgrounds whom depend on each other as a matter of necessity rather than choice (Sandal & Palinkas, 2006). These environmental restrictions require highly adaptive group functioning to promote optimal psychological and behavioural health among group members (Sandal & Palinkas). It is arguable however that the nature of interactions with external parties (i.e. family and friends) may also impact the health of individuals by influencing their general approach to interpersonal interactions as well as the psychological resources available to negotiate challenging social dynamics.

The challenges associated with physical and psychological isolation from existing social networks engendered by Antarctic employment, and the restrictions on personnel movement beyond the station confines (particularly during the Austral Winter), identify Antarctica as an ICE. Investigations into the human experience of ICEs have primarily occurred within polar environments including Antarctica and have identified that residents strongly emphasise a need for privacy, time away from other residents, personalised space, flexibility in routine, and novelty of experience (Bluth, 1982; Connors, Harrison, & Akins, 1985; Earls, 1969; Eberhard, 1967; Stuster, 1986). Additionally, such research has identified factors which influence human adaptation, and therefore performance, within ICEs. These factors include the physical conditions of the environment (including temperature, weather conditions, and light-dark cycles), the habitability of the environment (including facilities and supplies for personnel), personnel characteristics (including number, heterogeneity, individual and group attributes, leadership style, previous experience, and

interpersonal cohesion), and program characteristics (including tasks, workload, duration, danger, and communication with external agents) (Kanas & Manzey, 2003; Sandal, 2000; Sandal & Palinkas, 2006). However, the nature of processes underlying how people adapt to this environment (and develop a capacity of sustained well-being and performance) has been less extensively researched. Understanding adaptive capacities and how they are enacted is essential to the process of identifying, for example, training and support needs required to facilitate such adaptation.

Despite the challenges associated with ICEs, evidence indicates that these issues pose minimal threat to performance and functioning (Leon et al., 1989), and that people can experience positive psychological outcomes and growth in response to the ICE experience (Oliver, 1979; Mocellin & Suedfeld, 1991; Suedfeld & Steel, 2000; Carrere & Evans, 1994). Possible explanations for the experience of positive outcomes associated with ICE residence propose that individuals who apply for such employment are highly motivated, and this motivation promotes high levels of performance (and therefore potential for growth) (Palinkas, Gunderson, Holland, Miller, & Johnsen, 2000; Sandal & Palinkas, 2006), and that psychological reactions to the environment are strongly influenced by interpersonal and cultural factors, as opposed to the physical environment (Sandal & Palinkas; Ritsher, Kanas, Gushin, & Saylor, 2005).

Other researchers have indicated that the absence of time-pressures and stressors routinely encountered in the home setting are also associated with this psychological enhancement (Palinkas et al., 1995; Sandal, 2000). The impact of re-encountering these stressors upon return is not extensively documented, nor is the experience of partners who are dealing with additional challenges engendered by the expeditioner's absence and the impact that this may have on expeditioner functioning and performance.

## 1.2 The Australian Antarctic Program

The Australian Antarctic Division (AAD) coordinates Australia's Antarctic program. As a division of the Department of Environment, Water, Heritage, and the Arts its charter is to

ensure Australia's Antarctic interests are advanced (AAD, 2007). In turn, funding and resources are controlled by the Australian government and are dependent on satisfactory research progress.

Australia is one of 20 nations that maintain a constant human presence in Antarctica through undertaking scientific research at permanent stations. The Australian Antarctic Division (AAD) administers the Australian Antarctic Program. The Australian Antarctic Program has four primary goals:

1. Maintain the Antarctic Treaty System and enhance Australia's influence in it;
2. Protect the Antarctic environment;
3. Understand the role of Antarctica in the global climate system; and
4. Undertake scientific work of practical, economic, and national significance.

To enable undertakings that assist in achieving these goals, Australian personnel use and maintain three permanent research stations on the Antarctic continent (Mawson, Davis, and Casey) and a sub-Antarctic station on Macquarie Island. All stations are equipped with modern buildings that contain living quarters, research laboratories, power houses, stores, workshops and other operational facilities that enable human life to be sustained for long periods in these physically and psychologically challenging environments (Lugg, 2005) that would otherwise be incapable of sustaining human life (Decamps & Rosnet, 2005).

Each year the AAD sends approximately 200 personnel to Antarctica and Macquarie Island, approximately 15-20 of whom will spend the winter at each of the four research stations (AAD, 2007). Typically, up to 45 percent of a research station population will have wintered before (AAD, 2007). The majority of personnel travel to Antarctica for the Austral Summer season (October through March), which is the most favourable time to conduct outside (field) work in science, as well as building maintenance (AAD, 2007).

The majority of personnel are employed on short-term contracts (three-15 months) that do not extend beyond their return from Antarctica. Within this subset, some personnel remain contracted to external organisations such as the Australian Bureau of Meteorology, Australian universities, and the Australian Defence Force during their Antarctic employment. In this way some expeditioners have to negotiate competing (and at times conflicting) organisational demands and agendas, which may influence the nature of adaptation to their role.

The men and women who work in Antarctica are drawn from all over Australia and around the world after successful completion of comprehensive application interviews and thorough medical and psychological testing (AAD, 2007). The procedures involved in the selection process serve the dual purpose of identifying individuals who possess qualities associated with enhanced performance in the Antarctic environment ('select-in' procedures) such as task ability, sociability, and emotional stability (Gunderson, 1973) and excluding applicants who are not suitable for employment due to factors (such as inadequate preparation, insufficient vocational skills, or psychiatric disturbance) which may negatively impact their own performance, as well as the performance and well-being of others, whilst working in Antarctica ('select-out' procedures) (Palinkas, Glogower, Dembert, Hansen, & Smullen, 2001; Suedfeld & Steel, 2000).

There is a great emphasis placed on effective personnel selection given that Antarctic expeditioners are required to live and work away from home for extended periods of time with limited access to regular support systems, as well as the social and economic costs that poor selection decisions can have on individual, social, and organisational performance outcomes (Sarris, 2006; Sarris & Kirby, 2005). As a result the selection process has been refined over time such that early reliance on interview-based selection (Taylor, 1987) has now been replaced by two-tier selection process: one based on their professional skills, the other on their personal qualities. Professional skills are assessed by certified qualifications,

whilst personal qualities (e.g. interpersonal style) are assessed with interviews, formal psychometric assessments undertaken by a psychologist, and direct observation of individuals in simulated tasks relevant to Antarctica (e.g. problem solving abilities in groups; AAD, 2008d).

The relatively limited formal research that has investigated the pre-departure period typically contrasts Antarctic populations with non-Antarctic populations. Such research demonstrated that expeditioners report higher levels of introversion, agreeableness, and intelligence (Gunderson & Nelson, 1966) whilst lower levels of anxiety (Butcher & Ryan, 1974), competitiveness, verbal aggressiveness, negative instrumentality (Musson, Sandal, Harper, & Helmreich, 2002) and subjective health complaints (Grant et al., 2007) when compared to normative populations. Additionally, the primary focus of such research has been to predict functioning during the Antarctic absence (thereby facilitating selection processes) as opposed to maximising functioning within the pre-departure period. Even less consideration has been afforded to the relationship between functioning during the pre-departure period and subsequent performance during the absence period. However, the nature of this relationship could be important as the psychological status of expeditioners (assessed prior to commencing pre-departure activities) could change as a result of their experiences during this period, potentially influencing the degree of resilience and vulnerability demonstrated in subsequent stages of Antarctic employment.

To date, research investigating the experience of Antarctic employment has primarily focused on the performance and well-being of the expeditioner whilst working in Antarctica, with numerous Antarctic researchers assessing expeditioner well-being and performance over the course of Antarctic absences. Although primarily limited to expeditioners who experienced an Antarctic winter employment, it has been consistently demonstrated that these measures fluctuate over time as a function of both physiological and psychological

mechanisms, and both internal and external events (Bhargava, Mukerji, & Sachdeva, 2000; Brennan, Hall, Verplanken, & Nunn, 2005; Decamps & Rosnet, 2005; Steel, 2001; Suedfeld & Steel, 2000; Weiss, Feliot-Rippeault, & Gaud, 2007). However, due to the limited demarcation between work and non-work roles at this time, a majority of the precipitants are work-related (Cravalho, 1996).

Whilst some authors have identified pre-existing personality variables associated with better adaptation within the Antarctic environment including emotion-focused coping, defensive hostility, openness (Grant et al., 2007), and emotional stability (Doll & Gunderson, 1970) many argue that the identification of specific and stable personality traits predictive of effective Antarctic employment is difficult (Gunderson, 1974; Palinkas et al., 2000). However, the difficulty in identifying factors facilitative of positive adaptation (and therefore performance and well-being) demonstrated by expeditioners may be related to the methodological approaches employed in previous research designs.

Typically, such research has employed quantitative measures applied once during pre-departure and then again during the absence period. Compared to longitudinal designs incorporating both quantitative and qualitative approaches to data collection, such investigations do not allow for the mechanisms underlying change to be identified. Furthermore, they assume that the characteristics or traits demonstrated by expeditioners remain static between different phases of the Antarctic employment experience, although considering the relative paucity of research linking pre-departure experiences with well-being and performance outcomes 'on the ice', there is little evidence to suggest that this is the case.

Additionally, whilst research has identified that post-return evaluations of Antarctic employment demonstrate the existence of both positive (including increased self-reliance (Taylor, 1974), self-satisfaction (Cravalho, 1996), tolerance of others, personal insight, achievement motivation, and self-efficacy (Suedfeld, 2002), and decreased long-term risk of



hospital admissions compared to military personnel without Antarctic experience (Palinkas, 1986) and negative outcomes (including relationship strain, perceived missed opportunities (Taylor, 1969; Taylor & McCormick, 1987), disturbed sleep patterns, declines in cognitive functioning, indecisiveness, emotional withdrawal, and communication difficulties (Popkin, Stillner, Hall, & Pierce, 1978), the mechanisms by which these outcomes are achieved have also largely been overlooked. This again suggests that research investigating adaptation within Antarctic populations needs to focus not only on the individual phases of Antarctic employment, but also the relationships between them in order to facilitate positive outcomes in both the short and long-term.

Examination of the existing literature indicates that there is a need to assess the experiences encountered during pre-departure, absence, reunion, and reintegration phases of Antarctic employment both independently as well as collectively. Independent analysis of each phase of Antarctic employment allows for maximising strengths and resilience at each time point, thereby enhancing short-term well-being and performance of expeditioners. However, it is also necessary to examine the collective experience spanning across all phases of employment to identify how functioning and well-being patterns demonstrated during one phase may influence later adaptation, and in this way promote interventions that enhance long-term well-being and performance. As existing Antarctic Psychology literature does not address this issue, preliminary insights may be gained from other populations which undergo prolonged vocational absences (e.g. the military) although it is acknowledged that differences between these populations and expeditioners may limit the validity of such comparisons.

In their review of the experience of prolonged vocational separations Busuttil and Busuttil (2001) identified that the nature of individual, organisational, and relationship dynamics demonstrated at each phase of the separation experience have the potential to impact later adaptation and adjustment. Individual factors primarily related to coping strategies and

personality traits. Organisational factors primarily addressed provision of appropriate support services as well as information dissemination. Relationship factors focused on a combination of malleable (relationship dynamics including communication and satisfaction) and non-malleable (relationship length) factors. For this reason, they argued that each phase of the separation experience should be examined in detail, as should the interrelationships between phases, to inform the development and implementation of proactive prevention and/or intervention strategies. In particular, it was argued that the comparatively under-researched pre-departure phase of employment should be afforded equal attention to that traditionally provided the absence period considering that pre-existing functioning patterns demonstrated at this time may provide more insights and opportunities for interventions regarding post-return experiences than that gained from the absence period alone (Busuttil & Busuttil).

This argument is consistent with findings reported by Hill (1949) who demonstrated that within military populations two key variables correlated with reintegration experiences related to pre-departure relationship functioning (length of relationship and pre-departure relationship satisfaction). Implicit from such arguments is that the post-return phase of employment engenders unique challenges that need to be understood, as well as how preceding experiences may influence these. Furthermore, recent data has demonstrated that inappropriate interventions based on inadequate understanding of the total employment experience, or delivered at inappropriate times, can result in prolonged difficulties at both the individual and family level (Busuttil & Busuttil).

When examining the experience of vocational separations it is apparent that the demands placed on the employee and contexts in which these are undertaken vary according to the phase of employment as well as the nature of individual and relationship resources available to them. In order to identify factors that facilitate positive adaptation at the individual, organisational, and relationship level at each phase of the employment experience requires

examination of each independent phase as well as the relationships between them.

Furthermore, it is important to focus on vocationally specific challenges at each phase to ensure the applicability of research findings. Thus the nature and intensity of demands placed on expeditioners during pre-departure, absence, reunion, and reintegration need to be considered.

#### *Employment within Australian Antarctic Research Programs*

Individuals employed to travel to Antarctica or Macquarie Island to undertake and support Australian Antarctic research programs are referred to as 'Antarctic expeditioners'. There are a diverse range of occupational categories subsumed under the title 'Antarctic expeditioner' including both scientists and support personnel, and all are critical in providing for a successful Antarctic program (AAD, 2007). The effective selection and training of expeditioners, as well as ensuring the availability of support to themselves and their families contributes to this success and to the physical and psychological safety of the Antarctic community (both expeditioners and partners) throughout the employment experience.

Personnel employed for a winter position ('winterers') usually commence work with the Australian Antarctic Division between July and August each year (AAD, 2008b).

Winterers travel by ship to Antarctica's continental stations (Casey, Davis, or Mawson) or to the sub-Antarctic station at Macquarie Island following a two to three month training period, and usually remain at a station for between nine and 15 months (referred to as 'wintering over') undertaking the primary task for which they were employed (Godwin, 1991).

Additionally, all personnel participate in housekeeping duties and some may also volunteer for secondary tasks, such as fire officer or medical theatre assistant.

In contrast, personnel employed for a summer position on an Australian Antarctic Research program typically commence work with the Australian Antarctic Division between August and September each year, departing by ship to Australia's Antarctic continental

stations or Macquarie Island approximately two to three weeks later. Typically referred to as ‘summerers’, expeditioners employed for a summer position usually remain in Antarctica for periods between three to eight months, depending on the nature of their employment and the specific programs being undertaken at each station (AAD, 2007). Summer personnel are also required to participate in housekeeping duties and some may have secondary tasks, however these roles are mostly undertaken by wintering personnel (AAD).

For many expeditioners, both summer and winter personnel, employment within the Australian Antarctic program requires relocating to Hobart, Tasmania for the period immediately preceding their departure for Antarctica. The impact this has on pre-existing individual, organisational, and relationship dynamics is not well understood, and may have implications for adjustment and adaptation at later stages of Antarctic employment. It is also arguable that the different training requirements between winter and summer personnel may also affect this process, and therefore requires further investigation.

### *Training for Antarctic employment*

Regardless of the nature of their employment, all expeditioners are required to participate in pre-departure station and field training programs designed to prepare them with the knowledge and skills to ensure the safety and well-being of themselves, others, and the environment whilst in Antarctica. The training program provided by the AAD has been subject to ongoing revision based on facilitator and participant feedback, and has resulted in publication of an expeditioner handbook as well as a separation brochure which has subsequently informed the practices adopted by NASA regarding preparation of departing personnel (Ayton, 2009, personal communication).

The training consists of lectures, films, demonstrations, activities, and discussions in a variety of disciplines designed to give a clear indication of what to expect while in Antarctica

(AAD, 2008b). Particular emphasis is given to situations and problems associated with individual, social, organisational, and familial functioning that may occur during the year and how to handle them (AAD, 2008b). Whilst partners do not directly participate in this pre-departure training program they are able to access information and support through the Expeditioner Training and Family Liaison Officer (ETFLO) who, on behalf of the Australian Antarctic Division, is committed to ensuring that expeditioners, family, and friends are aware of, and have access to, resources in preparation for Antarctic separation (AAD, 2007). Additionally, the ETFLO is able to assist with issues in respect to separation, communication with people in Antarctica, and provide supportive contact to those seeking help. General services provided by the ETFLO often involve organising gifts to be sent to the partner remaining at home, that information resources are provided regarding the Antarctic employment experience, basic counselling and referral to the Employee Assistance Program when more complex or serious emotional reactions occur (AAD, 2007).

The duration of the training program ranges from two weeks to three months, with wintering personnel required to undertake more comprehensive preparation than their summer counterparts (AAD, 2008b). Throughout the training period expeditioners typically work a minimum of eight hours daily, although this increases as the departure date approaches such that it is not uncommon to be undertaking administrative tasks (e.g. station meetings) late into the evening (Boydell, 2008, personal communication). The combined intensity and duration of pre-departure training schedules necessitate long working hours, particularly for staff permanently employed by the AAD who typically have a greater involvement in the preparation of equipment and a larger administrative role prior to departure compared to contractual staff (Ayton, 2009, personal communication).

When not engaged in training or preparatory work expeditioners are required to assist with general tasks in support of expedition activities, such as preparing equipment and

supplies (AAD, 2007). Thus there is limited time outside of work-related activities prior to departure for Antarctica. The impact of this on future adaptation of expeditioners, and partners, is not well understood and requires further investigation.

### 1.3 Human Performance in Antarctica

An extensive body of literature testifies to the impact that the Antarctic environment can have on human functioning. Whilst the experience of cold related injuries such as hypothermia, frost bite, and frost nip (Cattermole, 1999; Hassi & Makinen, 2000; Steine, Roseth, Sandbaek, et al., 2003) can largely be avoided through adherence to occupational health and safety procedures, there are a number of other physiological and psychological responses over which the expeditioner has limited control. The influence of these challenges on individual, social, and occupational functioning, both short and long-term, cannot be underestimated.

Whilst the duration of these symptoms varies depending on their nature and severity, it is generally accepted that they are temporary in nature, peak during midwinter, and largely resolve upon return from Antarctica (Benschop, Rodriguez-Feuerhahn, & Schedlowski, 1996). In contrast, long-term positive and negative health outcomes have been observed to persist in expeditioners after they return from Antarctica (Palinkas, 1986) although the nature and course of these outcomes is not well understood, particularly in comparison to experiences associated with the absence period. Additionally, the impact of vicarious exposure to these challenges as experienced by partners has not been systematically investigated and is not well understood. Thus it is evident that further research investigating these processes is warranted in order to better predict and address short and long-term outcomes associated with each phase of the Antarctic experience for both expeditioners and partners alike

One prominent symptom experienced by expeditioners during extended Antarctic residence, and over which expeditioners can exert very little influence, is varying degrees of sleep disturbance. Studies have estimated that sleep disturbances affect approximately two thirds of all expeditioners in Antarctica (Palinkas, 1992; Gander, MacDonald, Montgomery, & Paulin, 1991). Reported difficulties have included difficulty falling asleep, staying asleep, or both (Natani, Shurley, Pierce, & Brooks, 1970; Usui, Obinata, Okado, Fukuzawa, & Kanba, 2000), and reductions in Stage III and rapid eye movement (REM) sleep (Natani, et al.; Natani & Shurley, 1974). Within the literature these difficulties have been attributed to a combination of factors including; exposure to extreme light-dark cycles in the environment which can disrupt circadian rhythms (Gander, et al.; Kennaway & Van Dorp, 1991), cold exposure (Angus, Pearce, Buguet, & Olsen, 1979), and psychosocial stressors (Palmai, 1963; Palinkas, Houseal, & Miller, 2000). Disrupted sleep can also attribute to feelings of fatigue, another symptom associated with extended Antarctic residence (Mullin, 1960; Natani & Shurley; Ikegawa, Kimura, Makita, & Itokawa, 1998).

Although there is mention of psychological difficulties in anecdotal accounts of early Antarctic exploration (Cook, 1998; Jacka & Jacka, 2009; Palinkas, 1993), formal scientific investigations into these phenomena did not occur until after the International Geophysical Year (IGY) in 1957-1958. The primary precipitants for this new research direction were the establishment of permanent research stations in Antarctica which increased both the number of expeditioners and the duration of their residence, as well as the identification of a case of schizoaffective disorder at one research station (Nardini et al., 1962), and the experience of widespread interpersonal conflict among expeditioners due to leadership difficulties at another (Behrendt, 1957). The limited resources available to assist in such circumstances, and logistical difficulties associated with evacuation of psychologically disturbed individuals,

emphasised a need to prevent the occurrence of extreme psychological distress in Antarctica (Palinkas & Suedfeld, 2007).

Since this time there have been extensive investigations into the psychological experience of working in Antarctica with the aim of informing selection procedures, thereby enhancing person-environment fit (Palinkas, 1986; Sarris & Kirby, 2007; Suedfeld & Steel, 2000). Again this demonstrates an emerging issue requiring systematic analysis of both the people undertaking Antarctic employment and the environment in which this occurs such that these factors can be incorporated into training needs analysis thereby facilitating an enhanced ability to engage strategies associated with positive adaptation.

Numerous studies have identified that the primary psychological challenges associated with extended Antarctic residence involve individual adjustment to the physical and social environment; the lack of physical, psychological, and social novelty for extended periods; and the absence of social support from family and friends throughout the expeditioner's time 'on the ice' (e.g. Palinkas, 2000; Sandal, Leon, & Palinkas, 2006; Stuster, Bachelard, & Suedfeld, 1999; Suedfeld & Steel, 2000). In particular, the effects of separation from family and friends, especially intimate partners, have been reported as a major stressor for expeditioners (Godwin, 1991; Taylor, 1973) and are a common reason for seeking counselling from the station medical officer (Palmai). Furthermore, researchers have indicated that prolonged isolation from family and friends may precipitate mood or adjustment disorders in expeditioners (Palinkas, et al., 2000), and may also exacerbate pre-existing conditions including personality or substance use disorders (Strange & Youngman, 1971) that were not identified in the selection process.

Although some researchers identified personality characteristics associated with affective stability (Leon, Atlis, Ones, & Magor, 2002; Steel, Suedfeld, Peri, & Palinkas, 1997) and social compatibility (Palinkas et al., 2000) as contributing to enhanced human



performance in the Antarctic environment, other researchers have demonstrated that personality characteristics generally have limited predictive ability in terms of behaviour and performance in Antarctica. Researchers have identified two reasons for this discrepancy. Firstly, there is a high degree of self-selection among Antarctic expeditioners which results in smaller variations in personality characteristics than is demonstrated in the general population (Rivoli, 1997; Steel et al., 1997; Taylor, 1987). Secondly, it appears that conditions associated with Antarctic employment – such as organisational practices (Sarris, 2006; Sarris & Kirby, 2005), leadership styles (Schmidt, Wood, & Lugg, 2004; Schmidt, Wood, & Lugg, 2005), isolation, confinement, and environmental hazards (Carver & Scheier, 1994) – have a greater impact on human performance (both physical and psychological) than more stable characteristics such as personality (Carver & Scheier; Holahan & Moos, 1987).

Despite careful screening and selection procedures, research indicates that a proportion of expeditioners will experience psychological distress associated with Antarctic residence. Whilst the incidence of symptoms sufficient to fulfil DSM-IV diagnostic criteria are rare (approximately 4-5 percent of expeditioners), mood, adjustment, and sleep related disorders account for 60 percent of these diagnoses (Lugg, 2005; Palinkas, et al., 2005). Additionally, subsyndromal symptoms of depression, insomnia, anxiety (Gunderson, 1968; Natani & Shurley, 1974; Strange & Youngman, 1971), aggressive behaviour, difficulty in concentration and memory (Palinkas, Glogower, Dembert, Hansen, & Smullen, 2001; Palinkas, Johnson, Boster, & Houseal, 1998), and the occurrence of mild fugue states have been associated with the Austral Winter in Antarctica, and are often referred to as the “winter-over syndrome” (Palinkas, et al., 1995; Strange & Klein, 1973).

Another pattern of psychological responses to Antarctic residence has been labelled the ‘third quarter phenomenon’ (Bechtel & Berning, 1991) and refers to seasonal variations in mood, psychosomatic complaints, interpersonal interactions, and work performance with

negative symptoms peaking shortly after mid-winter (approximately the third quarter of employment duration) and resolving towards the end of the Austral Winter (Decamps & Rosnet, 2005; Bhargava, Mukerji, & Sachdeva, 2000; Ikegawa et al., 1998; Palinkas et al. 1995a, 1995b, 1996; Palinkas & Johnson 1990). However, empirical evidence supporting the existence of specific, critical phases in Antarctic adaptation has been equivocal (Bhargava, et al. 2000; Leon, et al. 2002; Palinkas 2003; Palinkas, et al. 2004; Sandal 2000).

More recently, researchers have identified the experience of salutogenic effects associated with Antarctic employment, particularly in individuals employed for summer positions which are typically shorter in duration and enjoy more conducive weather conditions (Sandal et al., 2006). Specific positive outcomes associated with Antarctic employment experience have included increased levels of self-reliance (Palinkas, 1991), self-efficacy (Kahn & Leon, 1994), self-growth (Care'rré et al., 1991; Natani & Shurley, 1974; Oliver, 1991; Mocellin & Suedfeld, 1991), cooperativeness, and striving towards important or challenging goals (Suedfeld, 2002).

Expeditioners have also been reported to make frequent reference to the positive effects engendered by the grandeur of the physical environment, the experiences of camaraderie and support amongst station members, and the sense of achievement in overcoming the challenges of the Antarctic environment (Mocellin & Suedfeld, 1991), with many considering their Antarctic residence as one of the best experiences of their life (Oliver, 1991). These results indicate that the physical, psychological, and social challenges associated with Antarctic employment are not inherently detrimental to expeditioner functioning and performance. However the processes of psychological adaptation and resilience and their relationship to positive and negative change have not received adequate attention within existing Antarctic literature, nor have experiences of Antarctic employment outside the expeditioners' time 'on the ice'. Identification of the salient predictors of

resilience and articulation of the mechanisms linking them to adaptive outcomes may enable proactive prevention and intervention strategies to focus on enhancing this capacity throughout the experience of Antarctic employment, from pre-departure through reunion and reintegration.

Furthermore, from the review of the literature presented above, it is increasingly apparent that these predictors are likely to extend beyond the individual to include organisational and relationship factors and span all phases of the employment experience. Awareness of the interdependence between these factors has been accommodated in research investigating the experience of military populations (e.g. van Breda, 1999), expatriate managers (Adler & Ghadar, 2007; Andreason, 2003), and rescue workers (Paton et al., 2008). Although initiated by Taylor and McCormick over 30 years ago, the shift in focus of Antarctic psychology to include the experiences beyond expeditioners to partners has not been pursued. As a result, this facet of Antarctic employment experiences remains under-researched and not well understood. It is also unclear to which results from other organisational cohorts can be generalised to the Antarctic experience.

A partial explanation of this deficit may relate to the difficulty in recruiting and retaining partners who are geographically dislocated not only from the expeditioner, but often from one another. Additionally, retention of expeditioners post-return is often undermined by this same geographic dislocation which can be compounded by repeated vocational absences in short succession - by either returning to Antarctica, or pursuing other remote employment opportunities (Taylor & Shurley, 1971) such as those afforded by mining operations. Furthermore, the relevance of such research may not be immediately clear to expeditioners or partners, although evidence investigating the experience of expatriate managers and their partners indicates that this second explanation is unlikely as these populations have demonstrated a ready willingness to provide insights into their experiences in the hope that it

may improve the quality of life experienced by themselves, as well as others who later enter the organisation (Andreason, 2008; Shaffer & Harrison, 2001; Shaffer, Harrison, Luk, & Gilley, 2000).

Thus it would seem that although there are inherent challenges associated with the recruitment and retention of participants within Antarctic populations, particularly regarding provision of longitudinal data, the potential insights into mechanisms underlying positive and negative adaptation outweigh the impediments as detailed above. Traditionally, research focusing on Antarctic populations has attracted high levels of participation and it has been repeatedly commented on the willingness of such individuals to consent despite the potential of research designs to be intrusive or invasive (Taylor, 1987). Furthermore, evidence from other populations who experience extended vocational absences indicates that there is likely to be a willingness to contribute to such research programs, particularly if the benefits from doing so are seen as personally relevant.

CHAPTER TWO

THE WORK-FAMILY INTERFACE

## 2.1 The Work-Family Interface

The interrelationship between work and non-work roles has been examined from several perspectives, with an emphasis on investigating the employee experience of the work-family interface and its implications for performance of work and family roles. Contemporary conceptualisations of the work-family interface propose that although primarily considered an organisational factor work related demands can interfere with family related responsibilities (Work Interference with Family - WIF) and family related responsibilities can interfere with work related demands (Family Interference with Work - FIW) (e.g., Adams, King, & King, 1996; Greenhaus, Collins, Singh, & Parasuraman, 1997; Netemeyer, Boles, & McMurrian, 1996; Thomas & Ganster, 1995).

The processes associated with WIF and FIW differ according to the source of the interference, whether imposed from the work or family domain (Frone, 2003). Whilst WIF is primarily influenced by factors generated within the work domain, the effects of WIF primarily occur within the family domain (e.g. Adams, et al., 1996; Frone, 2000; Frone, Russell, & Barnes, 1996; Frone, Russell, & Cooper, 1997). For example, sources of work-family interference may include career identity salience which refers to how much effort is expended in executing work demands and therefore the level of performance demonstrated in the work role, which is an important consideration in extreme environments such as Antarctica where a reduction in effort has the potential to negatively impact not only the individual expeditioner, but also those relying on their contributions to ensure the safety, productivity, and well-being of all station members (Adams et al., 1996; Beutell & Wittig-Berman, 1999; Major, Klein, & Ehrhart, 2002); work-role overload which may be precipitated in Antarctic populations by long-work hours necessitated during the pre-departure period, as well as the intensity and challenges of work schedules inherent whilst working in Antarctica (Frone et al., 1997; Major et al.; Parasuraman et al., 1996; Wallace,

1997); schedule inflexibility which within Antarctic populations is largely influenced by environmental and climactic constraints rather than purely bureaucratic policies (Berman, 1997); and organisational culture (Fried, 1998; Hochschild, 1997; Major et al.; Perlow, 1995).

The resultant effects of these work related sources of interference limit the availability of the individual to participate in the family domain, and therefore incur sanctions within the family realm, including relationship deterioration (Bakker, Demerouti, & Dollard, 2008; Brett, Stroh, & Reilly, 1992). Conversely, as FIW is principally influenced by factors within the family domain the resultant consequences primarily affect performance in the work domain (e.g. Brotheridge & Lee, 2005; Burke & Greenglass, 1999; Frone, 2003). However, due to the paucity of research investigating the concurrent experience of expeditioners and partners, the degree to which both WIF and FIW occur and become problematic within Antarctic populations is not clear.

More recently, research has identified that WIF and FIW can be further differentiated according to whether the interference is internally (psychologically) or externally (behaviourally) generated (Carlson & Frone, 2003). Internally generated interference occurs when one domain mentally impinges on the other through thoughts and ruminations (Carlson & Frone). In contrast, externally generated interference occurs when the demands in one domain physically inhibit or prevent participation in the other by taking time away from performing responsibilities (Carlson & Frone). Considering the requirements on expeditioners to be physically present within the work domain for long periods both prior to and during the absence period, it is arguable that a high degree of external WIF will be experienced. It is also possible that this degree of external engagement may engender more work-related ruminations, leading to high levels of internal WIF being reported. In contrast, increasing amounts of time away from home suggest that external FIW will be low in

Antarctic populations, although internal FIW may be more likely due to the emotional bonds with family and friends which may engender relationship-related ruminations whilst in the work domain.

Interference between work and family domains has been associated with a number of negative outcomes for the individual including decreased productivity, absenteeism, and poor morale (e.g. Bartone, Adler, & Vairkus, 1998) as well as other physiological, cognitive, social, emotional, and performance problems (e.g. Klein, 1996) and employee retention difficulties (Greenhaus, Parasuraman, & Collins, 2001; Hammer, Bauer, & Grandey, 2003; Wang, Lawler, Walumbwa, & Shi, 2004).

Experience of these decrements in functioning may be compounded by the challenges inherent within the Antarctic environment, and are potentially more hazardous considering the limited ability to evacuate individuals in the case of serious psychological or physiological impairment. Furthermore, experienced expeditioners constitute a valuable organisational resource which may be lost should high levels of negative interference between work and family roles be experienced. Additionally, negative outcomes are also experienced within the family domain including family distress (Frone et al., 1992), decreased well being of family members (Burke, Weir, & DuWors, 1980), increased marital tension (Brett, et al., 1992) and decreased family satisfaction (Kopelman, Greenhaus, & Connolly, 1983).

However, whilst the majority of research within this field has emphasised negative outcomes associated with interference between work and family roles there is increasing evidence to indicate that positive effects can result (Barnett, Marshall, & Pleck, 1992; Stevens, Minnotte, Mannon, & Kiger, 2007). In fact, some researchers have identified that positive experiences associated with interactions between work and family roles often outweigh the experience of negative interactions (Bernas & Major, 2000). Specific positive



outcomes associated with interference between work and family roles include increased role flexibility (Hughes, Galinsky, & Morris, 1992), positive psychological spill over (Larson & Almeida, 1999; Piotrkowski, 1979), enhanced self-esteem and self-efficacy (Barnett, 1999; Grimm-Thomas & Perry-Jenkins, 1994), and increased perceptions of social support (Carlson & Perrewe, 1999).

Considering research findings that expeditioners report enhanced self-esteem, self-efficacy, and social support following Antarctic employment it warrants investigation as to whether these outcomes are facilitated by positive interference between work and family roles.

Knowledge of antecedents and consequences associated with each source of interference, and interrelationships between these constructs, is important for both the individual and the organisation as these forms of inter-role conflict have the potential to undermine performance and satisfaction in both work and relationship domains (Killien, 2004). It is necessary to understand both the type and nature of the work-family relationship and their antecedents if these issues are to be managed effectively to promote positive adaptation and well-being within Antarctic populations both within, as well as the transitions between, various phases of the employment experience.

Most research investigating the work-family interface has examined this relationship within a context in which work constitutes a relatively stable influence on the employee's life. Importantly, from the perspective of understanding the relationship between family dynamics and work-family relationships, the point of selection for Antarctic work corresponds to a shift in the nature of this relationship, and one that has different, or asymmetric implications for the relationship.

Within this context, work-family interference is likely to be influenced by changes associated with new working arrangements (e.g., temporary relocation to different parts of

the country, extended work hours) engendered by Antarctic employment. Simultaneously, family-work issues become important as a result of the significant changes to familial interaction patterns which have the potential to create additional demands for the expeditioner as they consider issues associated with their impending departure. In addition to issues associated with the well-being of individuals within the relationship, this issue may have important implications for expeditioner stress. Concerns regarding the challenges to be faced by themselves and their partner during their absence can represent a potential stressor for expeditioners which may negatively impact on job performance, a particularly unwanted outcome in a hostile environment such as Antarctica.

The consequences associated with interference between work and family roles have significant implications for organisations engaged in Antarctic work. One implication concerns the organizational desire to promote employee well-being, safety, and effective working practices. The other reflects the fact that experienced expeditioners represent an important resource for the organisation in that they are already trained, better equipped to successfully adapt to Antarctic conditions, are more aware of difficulties associated with Antarctic employment, better suited to undertake positions of leadership, and represent an important resource for new expeditioners in that they can share their knowledge and coping strategies in order to assist adaptation once in Antarctica. However, present estimates indicate that only 45 percent of expeditioners return for subsequent Australian Antarctic seasonal employment (AAD, 2000).

By addressing various sources of WIF and FIW within Antarctic populations, it may be possible to further enhance the employment experience for expeditioners and partners alike, which in turn may positively contribute to adaptation throughout Antarctic employment, thereby facilitating enhanced employee performance, well-being, and potentially increasing retention rates.

Organisations which emphasise that high levels of commitment, loyalty, time, and energy be expended at work at the expense of engaging in other personal and familial roles have been termed 'greedy institutions' (Coser, 1974; Segal, 1986). In this way organisations such as the military, off-shore oil exploration, remote mining operations, deep-sea fishing ventures, and Antarctic programs may be considered 'greedy institutions' in that they engender physical (and to a degree psychological) separation from family members for varying amounts of time prior to and during the active employment phase (and usually involve working in high risk environments during separation), as well as devoting large amounts of physical and psychological resources to these work-related endeavours.

It has thus been argued that 'greedy institutions' such as these may increase the likelihood of experiencing both internal and external work interference with family (Segal, 1986; Vinokur, Pierce, & Buck, 1999). However, by definition families also demand high levels of commitment, loyalty, time, and energy be provided by members and in this way can also be classified a 'greedy institution' (Coser & Coser, 1974; Segal, 1986). Considering the nature of employment being undertaken largely precludes external family interference with work, it is probable that feelings of guilt and frustration may be engendered by the inability to physically participate in the family domain and that these ruminations are likely to increase the likelihood of experiencing internal family interference with work within such populations. However, considering the tangible and intangible supports provided by the ETFLO on behalf of the AAD, it is possible that some of this interference may be managed more adaptively, if not reduced, for both expeditioners and partners alike.

Research investigating these relationships has demonstrated that there are moderate to high levels of external and internal FIW and moderate to high levels of internal WIF reported by both the absent individual as well as their partners during vocational absences (Andreason, 2008; Segal, 1986; Vinokur, Pierce, & Buck, 1999). However, the level of distress reported

as a result of these sources of interference varied as a function of the availability of organisational supports. Specifically, it has been demonstrated that employees working within organisations in which support services were made readily available to both the absent individual as well as their partner, and in which institutional norms facilitated use of such services, reported more positive benefits associated with interference between work and family roles (Vinokur et al.).

## 2.2 The Experience of Vocational Separation

There are a number of vocational roles which involve routine, prolonged separations from family including those associated with Antarctic employment, extended space missions, military assignments, remote mining operations, fishing operations, disaster response teams, off-shore drilling rigs, or those whose employment is in another city (Vormbrock, 1993). However, apart from being considered an analogue for extended space missions (Lugg, 1994; Lugg & Shepanek, 2009; Palinkas, et al., 2000; Suedfeld & Weiss, 2000), there are few similarities beyond prolonged separation from family between Antarctic and other types of employment.

Although there are hazards associated with the Antarctic environment, these differ significantly from the nature of hazards encountered by disaster response teams (e.g. high intensity, short-term exposure to transient extreme and unusual environments typically precipitated by natural hazards) as well as those engendered by human conflict (e.g. fluctuating intensity and exposure to extreme and unusual environments typified by purposeful infliction of morbidity and mortality upon those with whom the conflict lies) as is the case within military populations. Individuals employed within remote mining operations, fishing operations, off-shore drilling rigs typically experience shorter separations than those

experienced by Antarctic populations and do not encounter the nature and degree of challenges posed by the Antarctic environment.

Furthermore, evacuation in the case of personal or family emergency is readily facilitated in most other employment settings – this is not the case for Antarctic expeditioners, particularly during the austral winter when climactic conditions largely prohibit travel to and from the continent which, at the best of times, is significantly more isolated and confined than those encountered within other populations who experience vocational separations (DeCamps & Rosnet, 2005; Lugg, 2004).

For these reasons findings derived from other populations may not readily generalise to the Antarctic employment experience, therefore investigation into the unique experience of Antarctic populations is warranted. If it is determined that there is considerable overlap between this and other forms of employment, recommendations and strategies derived from other populations may be applied to the Antarctic employment context to enhance well-being and performance. However, if it transpires that Antarctic employment is influenced by unique factors not demonstrated within other populations then application of such recommendations and strategies would be ill-founded and potentially detrimental to the health and well-being of expeditioners and their partners.

Research indicates that reactions to separation demonstrated by family members, particularly intimate partners, reflect characteristics of the separation experiences including duration, frequency, prior experience, and intervening stressors (Vormbrock, 1993). Additionally, reactions differ between the departing family member, and those left behind (Logan, 1987; Pincus, Houseal, Christenson, & Adler, 2003). Knowledge of these differences and how they impact present and future functioning for both the partner and the employee is an important consideration in the development of intervention programs at both the organisational, community, and individual level. It also has implications for the training of

those who will design and deliver programs and may have implications for organizational change in order to incorporate the implications of these dynamics. This then warrants research investigating the experiences of partners and expeditioners separately as well as collectively, and to do so in the context of the period of their engagement with the organization, to provide a more comprehensive understanding of the unique and interdependent nature of these issues when considering adjustment and adaptation at later stages of the employment experience.

Limited research has examined the experience of adjustment to vocational separation from the partner's perspective, despite evidence for the reciprocal effect between the employed individual's adjustment and that of their partner (Andreason, 2007; Shaffer & Harrison, 2001). For this reason it has been argued that existing models of adjustment to novel work arrangements (which arguably include Antarctic employment) are inadequate, and need to be revised to include a more holistic approach including both the employed individual and their partner (Andreason; Shaffer & Harrison). This argument is further emphasised by data indicating that partner dissatisfaction or adjustment difficulties influence the social, emotional, and vocational functioning of the absent individual and have even been associated with early return from an assignment (Andreason; Mendenhall & Oddou, 1985; Schaffer & Harrison).

A number of models detailing the experience of vocational separation have been proposed, with considerable overlap in the phenomena described and most being developed through an understanding of the military experience. Although the generalisability of such models is questionable considering the differences under which military deployment is undertaken compared to other vocational separations, they may inform approaches to the study of other populations through providing a basic framework of experience. Existing models indicate that each stage of the employment experience is characterised by a time

frame, as well as specific individual, organisational, and relationship challenges that family members must negotiate.

Whilst the number of stages and challenges posed to families differs between models, they all contain components relating to pre-departure, absence, reunion, and reintegration at the individual level as well as that of the relationship unit and demonstrate that each phase of the separation experience poses unique challenges for both the absent individual as well as family and friends left behind (Logan 1987). Furthermore, research indicates that the dynamics of reunion and reintegration are predictable from the functioning patterns adopted during the preceding phases of the separation experience (Busuttil & Busuttil, 2001; Hill, 1949; McCubbin, Thompson, Thompson, & McCubbin, 1993; Somerfield & McCrae, 2000) which provides further impetus for investigating the interactive nature of these experiences to inform proactive intervention strategies.

#### *Pre-departure*

The pre-departure period encompasses the period of time from when an individual begins preparations for employment through to their physical departure from home. The length of the pre-departure period varies according to the type of employment being undertaken (Logan, 1987; Pincus, et al., 2003), and in some instances exceeds that of the physical absence.

Commonly reported symptoms experienced by both the departing individual and their partner during pre-departure include emotional lability, physical and psychological distancing (Pincus, et al., 2003), anger, sadness, guilt, and frustration (Bey & Lange, 1974; Decker, 1978; Hill, 1949; Knapp & Newman, 1993). The increased physical, psychological, administrative, and work-related demands encountered during this period can further exacerbate these challenges and destabilise existing relationship functioning patterns, particularly relating to physical and psychological intimacy and communication (Pincus et

al.). The level of satisfaction associated with the experience of the pre-departure period has the potential to influence the nature of relationship interactions during subsequent stages of employment (Busuttil & Busuttil, 2001).

The limited formal research that has investigated the pre-departure period within Antarctic populations typically contrasts Antarctic populations with non-Antarctic populations. Such research indicates that expeditioners report higher levels of introversion, agreeableness, and intelligence (Gunderson & Nelson, 1966) whilst lower levels of anxiety (Butcher & Ryan, 1974), competitiveness, verbal aggressiveness, negative instrumentality (Musson, Sandal, Harper, & Helmreich, 2002) and subjective health complaints (Grant et al., 2007) when compared to normative populations. However, the affective experiences and processes underlying adaptation to this phase of employment remain largely unknown.

Even less is known regarding the partner experience of Antarctic employment. To date, only one published study has examined the concurrent experience of expeditioners and partners during the pre-departure period. Although limited to only 12 participants, Taylor and McCormick (1987) identified that neither participant category demonstrated high levels of distress during this period. Furthermore, results indicated that compared to expeditioners, partners reported higher levels of satisfaction regarding the employment decision and lower levels of anxiety regarding potential illness or injuries occurring during the absence period although the mechanisms underlying these outcomes were not investigated.

### *Absence*

Traditionally, the period of absence has been the most intensively researched aspect of vocational separation. Spanning the duration of the physical absence between the individual and their family, progression through this period seems to occur in a predictable stage wise manner. Immediately following departure both partners and absent individuals experience conflicting emotions of relief and despair, accompanied by a temporary escalation



in psychological and somatic complaints (Hill, 1949; Logan, 1987; Pincus et al., 2003). Redistribution of roles and responsibilities results in the establishment of new routines, thereby further altering pre-existing individual and relationship functioning patterns (Hill, 1949; Logan, 1987; Pincus et al., 2003) which can pose further challenges (both positive and negative) during this and subsequent periods.

The expeditioner experience of the absence period is well documented. Numerous studies have identified that the primary psychological challenges associated with extended Antarctic residence involve individual adjustment to the physical and social environment; the lack of physical, psychological, and social novelty for extended periods; and the absence of social support from family and friends throughout the expeditioner's time 'on the ice' (e.g. Mullin, 1960; Palinkas, 2000; Sandal, Leon, & Palinkas, 2006; Suedfeld & Steel, 2000; Taylor, 1987; Wood, Lugg, Hysong, & Harm, 1999). However, whilst the effects of separation from family and friends, especially intimate partners, have been reported as a major stressor for expeditioners (Godwin, 1991; Taylor, 1973) the concurrent experiences of partners remain under-researched.

### *Reunion and Reintegration*

Although most researchers combine discussions of the reunion and reintegration processes, critical analysis of research evidence indicates that there are distinct differences in the experiences associated with each of these phases of employment. The reunion phase of employment begins upon the absent individual's physical return to their home environment and involves physical and psychological adjustment to the physical and social milieu.

Although there are discrepancies in the theorised duration of this period, most estimates indicate that the reunion period spans two-three months post-return before more long-term adaptation processes begin (Blount & Curry, 1992; Kelley, 1994; Logan, 1987; Rabb, Baumer, & Wiesler, 1993). Numerous authors have identified that the reunion period

typically encompasses a 'honeymoon' phase which is typified by excitement and positive interactions, gradually overshadowed by awareness and acknowledgement of adjustment difficulties which can lead to negative affective experiences and interpersonal interactions (Norwood, Fullerton, & Hagen, 1996; van Breda, 1997).

In contrast, the reintegration period is a more complex phenomenon which involves physical and psychological adaptation (as opposed to adjustment) to the physical and social environment, and for this reason some authors have argued the most challenging aspect of vocational absences (USUHS, 2004). It is arguable that these challenges are primarily related to changes that may have taken place in both the expeditioner and well as the partner during the absence period, precipitated by differences in experiences relating to routines, responsibilities, social networks, work demands, and the like.

Similar to theories of the reunion period, there are discrepancies in the theorised temporal onset and duration of this period; however most estimates indicate that the reintegration period begins approximately two-three months post-return, and can continue for up to one year or more, dependent on the circumstances and experiences associated with the absence period (Logan, 1987; USUHS, 2004). Researchers examining adaptation and reintegration experiences in other populations have demonstrated a pattern of functioning characterised by heightened levels of negative symptoms in the early stages immediately following the challenging event and gradual regression to pre-departure levels of functioning over time (Brickman & Campbell, 1971; Brickman, Coates, & Janoff-Bulman, 1978; Dunn & Fleming, 2001; Headey & Wearing, 1989; Kelley et al., 2001; Lucas, Clark, Georgellis & Diener, 2003).

Studies investigating post-return functioning of expeditioners have identified both positive (e.g. Palinkas, 1986) and negative (e.g. Taylor, 1969) experiences engendered by the Antarctic employment experiences, however have not detailed the underlying processes that

facilitated these outcomes. Furthermore, the focus has been on the demands and factors that individuals need to adapt to as opposed to identifying predictors of the level of adaptation demonstrated. Thus in addition to expanding the research focus to include all phases of the Antarctic employment experience as well as both expeditioner and partner experiences, it is also necessary to identify factors that explain observed differences in levels of coping with, and adapting to, the demands associated with Antarctic employment.

Considering the argument advocating an emphasis on adaptation processes and outcomes within this community it is necessary to work within a theoretical framework that accommodates these issues such as that provided by the salutogenic paradigm that accommodates the potential for adaptive and salutary outcomes to arise following challenging experiences. Two processes in particular, resilience and adaptation, become important in the context of applying this paradigm.

CHAPTER THREE

RESILIENCE AND ADAPTATION

### 3.1 Resilience and Adaptation

The term resilience is often used to imply an ability to ‘bounce back’ following exposure to challenging events that have the potential to undermine well-being and performance. However, because challenging events may result in fundamental changes in the context in which people live their lives (e.g., changes in family dynamics or responsibility), more recent definitions have been expanded to encompass the development of an enhanced capacity to deal with future events (Paton et al., 2008). Consequently, the definition adopted here argues that resilience is a process that facilitates positive adaptive capacity (Klein, Nicholls & Thomalla, 2003). Resilience thus defines the capacity of individuals, organisations, and relationship units to draw upon their own individual, collective and institutional resources and competencies to cope with, adapt to, and develop from the demands, challenges and changes encountered following exposure to challenging events (McCubbin, et al., 1993; Paton et al.).

Previous research has identified multiple factors that facilitate resilience and hence adaptive outcomes including: access to quality social support, age (although results have been contradictory depending on nature of challenging situation experienced), self-efficacy, use of problem-focused coping strategies (Paton, Millar, & Johnston, 2000), the ability to attribute meaning to the experience (Britt, Adler, & Bartone, 2001; Hart & Cooper, 2001; North et al., 2002), a supportive organisational climate (Hart & Cooper; Burke & Paton, 2006), empowerment (Conger & Konungo, 1988; Paton et al.), and interpersonal trust (Siegrist & Cvetkovich, 2000). Thus it is evident that resilience resources are associated with individual, organisational, and community (including family) factors, providing further impetus for research encompassing measurement of each of these domains.

In contrast, the term vulnerability is used to imply susceptibility to harm if exposed to events that have the potential to undermine well-being and performance (Cardona, 2003; Gallopin, 2006), and is often used to denote ‘risk’ of experiencing negative sequelae (Cardona). Consequently, the definition adopted here argues that vulnerability is a pre-existing condition of the individual and/or environment that increases the risk of experiencing negative outcomes in response to challenging situations (O’Brien et al., 2004).

Previous research has identified multiple factors associated with increased vulnerability to negative outcomes following exposure to challenging events including: lower levels of education (Rutter & Quinton, 1977; Sameroff et al., 1987; West & Farrington, 1977), lower socio-economic status (Luthar, 1991), limited access to or satisfaction with social support (Thoits, 1984), emotion focused coping, an unsupportive organisational climate, chronic exposure to negative experiences (Paton et al., 2008), and external locus of control (Werner & Smith, 1982).

Thus vulnerability and resilience can be conceptualised as discrete dimensions that concurrently influence the ability of individuals, organisations, and communities to experience positive adaptation following exposure to challenging situations. As these factors can interact with one another, it is necessary to assess the relative contribution of both vulnerability and resilience in order to develop comprehensive models of adaptation outcomes (Paton et al., 2008). In this way understanding and managing resilience involves adopting a perspective that assumes that salutary outcomes occur when individuals and groups can use their psychological and physical resources and competencies in ways that allow them to render challenging events coherent, manageable, and meaningful (Antonovsky, 1990), whilst not precluding the experience of negative outcomes engendered by pre-existing vulnerability factors.

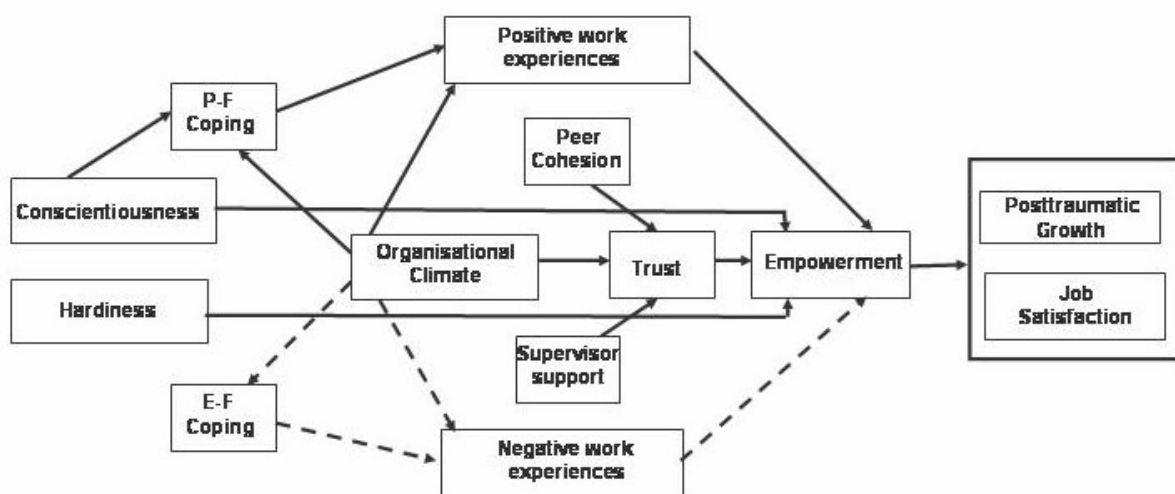
Exposure to challenging events can create a sense of psychological disequilibrium that represents a situation in which the existing interpretive frameworks or schema that guide expectations and actions have lost their capacity to organize experience in meaningful and manageable ways (Janoff-Bulman, 1992; Paton, 1994). The challenge is thus to identify those factors that can be developed prior to exposure that reduce vulnerability towards experiencing negative outcomes and enhance an individual's capacity to develop schema that broaden the range of (unpredictable) experiences that can be rendered coherent, meaningful and manageable (Frederickson et al., 2003; Paton, 1994; 2006). In this way the likelihood of experiencing resilient outcomes is enhanced.

Whilst most research has investigated vulnerability, resilience and adaptation at the level of the individual, there is increasing awareness that a comprehensive understanding of resilience must integrate individual, organisational, and relationship perspectives (Paton et al., 2008). This argument is based on the fact that both organisational and relationship environments define the context within which individuals experience and interpret events, and within which future capabilities are nurtured or restricted (Paton, 2006). At present the most comprehensive model of resilience within the literature is the Stress-Shield model.

The Stress-Shield model of resilience (Paton et al., 2008) was developed to explain the processes contributing to resilience in police officers and proposes that resilience reflects the extent to which individuals and the groups to which they belong can capitalise on resources and competencies (both psychological and physical) in ways that allow challenging events to be rendered coherent, manageable, and meaningful (Paton et al.). As such, this model incorporates organisational, team, and individual perspectives in order to gain a more comprehensive understanding of the resilience process and in this way differs from previous models that focus solely on either individual or organisational factors. Furthermore it

acknowledges the contexts in which individuals experience and interpret events and their consequences, and within which future capabilities are nurtured or restricted (Paton, 2006).

Specifically, the Stress-Shield model of resilience identifies that individual level factors of conscientiousness, hardiness, and coping interact with organisational level factors of climate and support to influence the degree of trust, empowerment, and growth that is experienced by the individual (see Figure 1).



*Figure 1.* The Stress-Shield model of resilience. Solid lines indicate positive influences on empowerment (and thus adaptive capacity and growth). Dashed lines indicate pathways with a negative influence on empowerment (Paton et al., 2008).

However, the Stress-Shield model does not account for familial influences to be acknowledged in the resilience and adaptation process. Previous researchers have consistently demonstrated that even if only one family member is directly exposed to the challenging situation, other members of the family unit are indirectly affected by the impacts that changes in the individual's functioning have on pre-existing family functioning and relationship dynamics (Stinnet & DeFrain, 1985; Walsh, 1996, 2003).



In turn, these same researchers have demonstrated that family processes (including the presence of an intimate relationship, and family level coping strategies) mediate the degree of adaptation demonstrated in response to the challenge thereby necessitating family/relationship level factors be included in any comprehensive model of resilience and adaptation. Furthermore, considering the unique nature of Antarctic employment and distinct differences from other forms of employment (including police work from which the above model was primarily derived, and which differs in terms of the duration and nature of experiences and separations from family members) the degree to which existing models of resilience can account for adaptation in Antarctic populations is not known.

## CHAPTER FOUR

### METHODOLOGICAL ISSUES WITHIN ANTARCTIC RESEARCH

#### 4.1 Methodological Issues within Antarctic Research

The physical parameters of the Antarctic environment are significantly removed from those required for optimal human performance and survival (Suedfeld & Steel, 2000) and are significantly remote from the routine experience of most human communities (Suedfeld & Steel). In particular, chronically low temperatures, blizzards and low humidity prohibit the ability to survive without complex man-made technologies and supports. The degree of geographic isolation from other continents and communities (including existing social support networks) also contributes to Antarctica's classification as an EUE. It is these stressors that warrant human functioning in Antarctica be singled out for investigation.

The nature of environments such as Antarctica and the extremes of human performance demonstrated within them in response to the inherent stressors (e.g. isolation, confinement, and extreme climate) means that the psychological, social, and physiological experiences of people residing there can be studied nowhere else (Rachman, 1984; Segal, 1986; Fiennes, 1993; Suedfeld, 1998). For this reason, environments such as Antarctica have been referred to as 'natural laboratories' for the study of human health and performance under stress (Shurley, 1970, 1974; Gunderson, 1974; Suedfeld, 1998). Despite this, comparatively limited research funding is directed towards the study of psychological functioning of expeditioners within Antarctic employment settings.

However, whilst the challenges inherent within the Antarctic environment provide opportunities to study the limits of human performance, they also impose challenges in conducting research within Antarctic settings. One of the most consistent issues raised is that geographic dislocation reduces the amount of control over the completion of assessment tasks, and often requires the assistance of personnel such as station leaders and medical officers to recruit and retain participants, and in some cases collect data (Taylor, 1987).

Although Fuchs (1963) reported occasional resistance to research being conducted in these settings, it appears that this is a rare occurrence with most research programs actively encouraging psychological research participation as evidenced by the plethora of research publications focused on Antarctic populations.

However, there have been instances in which the nature of such research programs have negatively impacted station morale (Siople, 1959) resulting in discontinuation (Nardini, Hermann, & Rasmussen, 1962). For this reason researchers concerned about the validity of test responses (Blackburn, Shurley, & Natani, 1973) have incorporated less invasive data collection procedures such as observation or self-report (Rivolier, 1973; Crocq, Rivolier, & Cazes, 1973). Contemporary researchers advocate a multimodal approach to data collection within Antarctic populations (Saal, Downey, & Lahey, 1980). However, this too can be problematic if personnel feel constrained due to being subject to observation or rating by other members on station (Taylor, 1987).

The nature of participant selection within Antarctic populations deviates from processes advocated in psychological research in terms of random selection, assignment, and representativeness (Millon & Diesenhau, 1972). Taylor (1987) also described difficulties in data collection associated with longitudinal assessments in which participants withdraw cooperation prior to completion thereby requiring exclusion of data. Longitudinal assessments are also difficult to execute due to often limited time outside of work-related tasks to complete assessments, as well as difficulty with follow-up post-return (Taylor). It may be for this reason that a proportion of post-return data has been collected retrospectively from expeditioners (e.g. Sarris, 2006), rather than during the period immediately following their return from Antarctica. Whilst this allows some insights to be gained regarding the post-return experience, retrospective data obtained in this manner suffers from methodological constraints associated with a lack of validity.

Retrospective data has been consistently shown to have low correlations with actual experiences due to the influence of memory processes (at both encoding and retrieval) as well as new experiences that have occurred during the intervening period between the event and the retrospective account which can influence the strength and valence of recollections (also known as response-shift bias) (Bernard, Killworth, Kronenfeld, & Sailer, 1984; Henry, Moffit, Caspi, Langley, & Silva, 1994; Howard, 1980). Although researchers such as Palinkas (1986) have circumvented the use of retrospective data by studying military personnel who have wintered in Antarctica (and for whom up-to-date records of residence are kept) the generalisability of such findings to civilian populations may be limited.

Thus challenges associated with undertaking Antarctic research can be both extreme and unusual in line with the environment in which it is conducted. However, despite these issues longitudinal research programs incorporating both quantitative and qualitative assessment procedures that facilitate assessment of experiences as they occur is most conducive to developing a comprehensive understanding of factors that promote resilience and adaptation as well as both positive and negative change over time within this population. Such knowledge is essential to further refining training and support programs to maximise the likelihood of positive outcomes at the individual, organisational, and relationship levels which in turn may enhance the well-being, productivity, and retention of Antarctic personnel. However, it also necessitates obtaining information on multiple domains of functioning without over-burdening participants who have limited time outside of work-related activities to complete research-related tasks. Therefore the current study adopted a cross-lagged mixed-method longitudinal approach to maximise data collection whilst not requiring excessive time commitments from participants.

CHAPTER FIVE  
THE CURRENT RESEARCH

## 5.1 The Current Research

Examination of the existing literature concerning the effects of vocationally induced separation on families reveals two major deficits. Principally, it has adopted a pathogenic orientation. Whilst not precluding the experience of adverse consequences arising from the separation experience, there is increasing recognition that both positive and negative outcomes often coexist simultaneously after exposure to ‘adverse’ events (Linley & Joseph, 2004). Furthermore, evidence indicates that positive consequences often outweigh the negative consequences in these situations (Tedeschi & Calhoun, 1995, 1996). For this reason the systematic, predictable, and repetitive aspects of exposure to extreme environments within a professional capacity make understanding adaptation and growth within such populations so important. It is also evident that the issues surrounding prolonged separation from family members extends beyond military personnel to include lesser studied populations including those involved in remote mining operations, off-shore drilling rigs, extended space missions, and Antarctic research programs. Furthermore, the marked differences in the nature of employment tasks between military and non-military populations suggest that application of models of adaptation between these cohorts may be inappropriate.

Existing research on the psychological issues that affect returning Antarctic expeditioners testifies to the coexistence of both positive and negative outcomes derived from their experience ‘on the ice’ (Palinkas, 2003; Taylor, 1973; Wood et al., 2000). However the predominant focus of such research has been limited to adjustment outcomes rather than the processes that underlie adaptation - processes which are likely to include individual coping mechanisms, organisational demands, and family functioning patterns (Houtzager, et al., 2004). Identification of the salient predictors of resilience and adaptation, and articulation of the mechanisms linking them to adaptive outcomes for

expeditioners and partners alike may enable intervention strategies to focus on enhancing this capacity throughout the employment experience.

Resilience and vulnerability mechanisms are discrete and operate concurrently, and both must be examined if a comprehensive understanding of reintegration is to be developed. Adopting a salutogenic perspective, the present study investigated the experience of Antarctic employment for single expeditioners, partnered expeditioners, and partners from pre-departure through to reintegration in an effort to identify factors which facilitate positive and negative adaptation. This was achieved through:

1. Identifying factors that promote psychological resilience and adaptation in Antarctic expeditioners and describing their relationship to positive and negative change arising from the expedition experience,
2. Identifying factors that promote psychological resilience and adaptation in Antarctic expeditioners partners and describing their relationship to positive and negative change arising from the separation experience, and
3. Describing the quality and nature of the reintegration experience by comparing the processes and outcomes of each of the above, and their implications for the process of reintegration over a 12 month period.

Additionally, the current study examined the impact of ship versus air-based personnel movement on these processes. On the 11<sup>th</sup> of January 2008 the first air-based transportation of Australian Antarctic expeditioners via a purpose-built, Australian operated air-link occurred (AAD, 2008). Prior to this the Australian Antarctic research program relied on ship-based transportation of all personnel and supplies. The introduction of the Australian-Antarctic air-link allows improved access to each of Australia's Antarctic research stations (Casey, Davis, and Mawson). In turn this enables more efficient transportation of scientists to, from, and across the continent enhancing Australia's scientific research capabilities (AAD, 2006a). It also allows more rapid



access to the continent in the event of emergencies (e.g. medical evacuations) (AAD, 2006b) whilst simultaneously reducing the environmental impacts of transportation methods on the continent (AAD, 2006b).

From the expeditioner perspective, one of the primary benefits associated with this shift in transportation arrangements is that it reduces the length of time that they are required to stay in Antarctica. Prior to the introduction of air-based travel within the Australian Antarctic program, the length of expeditioner absences were dependent on shipping schedules rather than the amount of time required to complete the task for which they were employed. Thus the new transportation arrangements may also entice individuals who previously declined Antarctic employment and research opportunities due to the length of absence from home. For example, anecdotal evidence indicates that more women who have family responsibilities that preclude prolonged absences may be more likely to undertake short-term Antarctic research opportunities afforded by the advent of air-based personnel movement.

However, from a social-psychological perspective there are additional factors beyond the benefits imbued by improved access to Antarctica and the reduced environmental impact of transportation processes to consider in the shift from ship to air-based personnel movement – namely, the impact these new arrangements have on expeditioner adaptation and functioning. Under the pre-existing ship-based transportation arrangements the return voyage from Antarctica could span two weeks or more (AAD, 2009). During this time expeditioners are gradually exposed to greater numbers of people and new social contexts as they interact with expeditioners from other stations, as well as those on familiarisation voyages, arts fellowships, and head office and vessel staff.

In contrast, expeditioners who return to Australia (RTA) via plane will touch down in Hobart, Tasmania, approximately 4.5-5 hours after leaving Antarctica having

been exposed only to those others on the flight and flight staff (AAD, 2006a). The impact of this reduced transit time on the physical, psychological, and social functioning on the expeditioner is not known. However it may compound challenges associated with adjustment to an environment with significantly different physical and social parameters from Antarctica.

In regards to the physical parameters, expeditioners will be relocated from the Antarctic environment which is characterised by low temperatures, humidity, and environmental stimulation to Hobart which is significantly warmer, more humid, and contains sights, sounds, and smells from which the expeditioner has been sheltered for some time. Anecdotal evidence suggests that the environmental stimulation experienced upon RTA via ship can be overwhelming for expeditioners who have had a comparatively more gradual exposure to environmental changes than that which will be experienced by those returning via plane. In this way it could be anticipated that these feelings of being overwhelmed may be exacerbated by the reduced transit time inherent within plane-based travel.

In regards to the social parameters, expeditioners will be relocated from a social environment which has been characterised by enforced interactions engendered by station life and a general lack of social novelty (Carrere & Evans, 1994; Sandal & Palinkas, 2006; Suedfeld, 1998). Furthermore, research has demonstrated that unique social norms and communication patterns can develop within Antarctic populations who winter together which may not be easily understood outside of these contexts. In contrast, social environments outside Antarctica are characterised by greater social novelty, interactions with a greater number of individuals and more control over the nature, frequency, and duration of such contact. Returning from Antarctica by ship allows gradual exposure to new social environments and larger numbers of people

which may facilitate better adaptation to non-Antarctic environments more readily than returning by plane which does not provide for the same level of social stimulation.

The process involved in negotiating changes in the physical and social environment encountered upon return from Antarctica place significant demands on the psychological resources of expeditioners. As such, it is likely that they would experience decrements in subjective health and well-being at this time. However, considering that previous researchers have identified that expeditioners demonstrate adaptive coping patterns that facilitate adjustment to challenging environments (Watts, Webster, Morley & Cohen, 1993) it is likely that any distress encountered upon return from Antarctica will be short-lived and will largely resolve over time.

Other nations operating research programs within Antarctica that also utilise air-based transportation of expeditioners and supplies include the United States of America, New Zealand, United Kingdom, Italy, Argentina, Chile, and Russia (AAD, 2006a). However, no published research exists regarding the impact of a shift from ship-based to air-based transportation on expeditioner health and well-being. In this way the shift from ship to air-based personnel movement within the Australian Antarctic program offers a unique opportunity to investigate the impact of differing transportation methods on expeditioner health and well-being. Such knowledge can then be integrated into existing training and support programs to ensure that they effectively meet expeditioner needs.

Thus the aim of this component of the study was to investigate the impact of a shift from ship to air-based personnel movement in Australian Antarctic populations. Specifically, it aimed to assess whether expeditioners who experience ship-based RTA can be differentiated from those who experience plane-based RTA based on subjective health and well-being response profiles. In consideration of the differences in social and environmental contexts encountered with a rapid return facilitated by air-based transport

it was hypothesised that expeditioners returning via plane would experience significantly lower levels of health and well-being (as indicated by higher HSCL-21 scores and negative change scores as measured by the CiOQ, lower quality of life scores and lower positive change scores as measured by the CiOQ) than those returning by ship when assessed two months post RTA. However, in light of the adaptive capacity of Antarctic expeditioners noted by previous research it was further hypothesised that these differences would become insignificant at 12 months post RTA.

## 5.2 Method and Design

In order to achieve these outcomes the current research project adopted a lagged cohort, longitudinal design incorporating both quantitative and qualitative methods of data collection. The longitudinal design accounted for the time frame within which adaptation and growth takes place and allowed repeated measures assessment of expeditioners and partners during pre-departure, absence, reunion, and reintegration experiences associated with Antarctic employment. Assessment spanning the duration of Antarctic employment in this manner was essential to the process of constructing a comprehensive model of adaptation within this population. It also allowed for the influence of unanticipated individual, organisational, and relationship factors to be accommodated within the analysis. Lagged cohorts allowed examination of contextual influences on adaptation (over time) and consistency of these, as well as facilitated comparison of the two modes of transportation. Details regarding participant numbers and demographics within each cohort are reported in Table 1.

The original sample comprised 482 expeditioners and 182 partners, however as incomplete data sets were excluded from the analyses, the final sample comprised 423 expeditioners and 149 partners within the study sample representing retention rates of 87.76% and 81.87% respectively. There were no significant differences between

excluded and non-excluded participants on quantitative pre-departure measures of individual, organisational, or relationship functioning ( $p>.05$  for all comparisons). Twenty-three of the 59 excluded expeditioner response profiles were omitted from analyses as post-return data was not provided following a change of contact details that were not provided to the researcher. Thirty expeditioner response profiles were excluded due to incomplete provision of absence data (i.e. not all monthly measures were completed). Four expeditioner response profiles were omitted as they returned to Antarctica prior to completing the 12 month follow-up assessment, and two were omitted due to early exit from Antarctic employment due to illness or injury. In contrast, 13 partner response profiles were omitted due to incomplete provision of absence data whilst 20 partners withdrew from the study upon relationship dissolution. These partners did not provide complete data sets as a result of their relationship dissolution and were therefore also omitted from analyses.

All participants retained in the final sample completed all quantitative assessments. Furthermore, a subset of 49 (26 male, 23 female) single expeditioners, 64 (52 male, 12 female) partnered expeditioners, and 97 (18 male, 79 female) partners elected to complete semi-structured interviews at pre-departure, during the absence period, upon reunion and reintegration. Analysis of quantitative indices indicated that these participants did not differ significantly from those participants who did not participate in the interview process.

Table 1

*Sample Characteristics of Participants Providing Complete Data Sets*

Demographic Variable	Category	Expeditioners (N=423)				Partners (N=149)			
		Cohort 1(n)	2(n)	3(n)	Total(n)	Cohort 1(n)	2(n)	3(n)	Total(n)
Age (years)	20-29	43	32	39	114	6	5	5	16
	30-39	87	51	34	172	34	23	24	81
	40-49	31	34	33	98	6	11	7	24
	50+	12	14	13	39	9	7	12	28
Sex	Male	119	103	82	304	10	7	7	24
	Female	51	37	31	119	43	47	35	125
Previous experience	Yes	64	72	59	195	31	20	19	70
	No	77	93	58	228	26	31	22	79
Length of expeditioner absence (months)	3-6	49	61	52	162	29	19	16	64
	7-10	6	7	4	17	21	27	18	66
	11-14	81	59	64	204	3	5	3	11
	15+	11	15	14	40	4	2	2	8
Involved in romantic relationship	Yes	87	101	94	282	69	37	43	149
	No	43	58	40	141	0	0	0	0
Method of return to Australia	Ship	173	131	100	404	55	46	16	117
	Plane	0	0	19	19	0	0	32	32

The quantitative measurement instruments were selected on the grounds that each comprised both resilience and vulnerability elements relevant to individual, organisational, and relationship dimensions, thereby allowing the mechanisms that may underpin positive and negative change in all participant categories to be explored. The quantitative instruments incorporated within the present studies are detailed in Table 2, as are details regarding reliability within the present studies.

Due to the exploratory nature of this research project, qualitative research methodology was also employed. Qualitative research facilitates exploration of participant thoughts and actions (Strauss & Corbin, 1998) beyond that provided by quantitative assessment procedures. Qualitative research can be used to extract intricate details such as thought processes, emotions, feelings and lived experiences, as well as social, cultural and organisational phenomena (Flick, 2006; Strauss & Corbin) and as such is able to assist in articulating both independent and interdependent aspects of the lived experience, which is of particular relevance within the current study which aims to investigate the differential and collective influence of individual, organisational, and relationship factors both within and between each phase of the Antarctic employment experience for expeditioners and partners alike. Qualitative techniques offer an investigation method using participants' own words to provide detailed evidence of experience that cannot be easily gained from observation (Patton, 2002), nor reflected in quantitative data collection procedures.

Table 2

*Summary of Quantitative Measures Incorporated Within Studies*

Assessment Category	Measure	Construct	Reliability (Cronbach's $\alpha$ )	Description
Individual	COPE Inventory	Coping	.79-.87	A 60-item multidimensional coping instrument designed to assess 15 conceptually distinct methods of coping. Participants respond to the statements by indicating the extent of their agreement along a 4-point Likert scale, ranging from 1 "I usually don't do this at all" to 4 "I usually do this a lot". A total score is not obtained, however higher scores on each coping subscale indicate greater use of that strategy. Consists of 10 coded items; 3 statements described in a positive manner, 3 statements described in a negative manner, and 4 non-scored items. Participants respond to the statements by indicating the extent of their agreement along a 5-point Likert scale, ranging from 0 "strongly agree" to 4 "strongly disagree". Scores are calculated by summing responses to statements, except those recorded on the non-scored items. Scores obtained on the LOT-R range from 0-24, with higher scores indicating higher levels of optimism. Comprises three subscales assessing performance difficulties, general distress, and somatic distress,
	Life Orientation Test-Revised	Optimism	.89	
	Hopkins Symptom Checklist (21 item version)	Health and well-being	.86-.93	



Table 2 (continued)  
*Summary of Quantitative Measures Incorporated Within Studies*

Assessment Category	Measure	Construct	Reliability (Cronbach's $\alpha$ )	Description
	WHOQOL-BREF	Quality of Life	.68-.85	<p>as well as providing a total distress score. Participants to report how stressed they have been within the past 7 days according to a 4-point Likert scale, in which 1 = <i>not at all</i> and 4 = <i>extremely</i>. Possible scores for each of the subscales range from 7 to 28, with higher scores indicating higher levels of distress. Total scores range from 21-84, with higher scores also indicating higher distress and lower levels of health and well-being.</p> <p>Assesses four conceptually distinct areas of functioning: physical, psychological, social relationships, and the environment. Participants respond to 26 statements by indicating the extent of their satisfaction along a 5-point Likert scale, ranging from 1 "<i>not at all</i>" to 5 "<i>very much</i>". Scores are scaled in a positive direction so that higher scores indicate higher levels of quality of life.</p>
	Personal Growth Initiative	Growth potential	.87	<p>Consists of nine statements rated along a 6-point Likert scale, ranging from 1 "<i>strong disagree</i>" to 6 "<i>strongly agree</i>". Scores are calculated by summing the responses on the items, with higher</p>

Table 2 (continued)

*Summary of Quantitative Measures Incorporated Within Studies*

Assessment Category	Measure	Construct	Reliability (Cronbach's $\alpha$ )	Description
Organisation	Work-Family Interface Scale	Work-family interface	.74-.88	<p>scores indicating higher levels of personal growth initiative.</p> <p>Assesses the degree to which responsibilities within the work domain impinge upon home duties (work interference with family), as well as the degree to which responsibilities associated with the home environment impinge upon work level duties (family interference with work). Participants respond to 12 statements by indicating the extent of their agreement along a 5-point Likert scale, ranging from 1 “<i>not at all</i>” to 5 “<i>almost always</i>”. Possible scores for each Interference Scale range from 3 to 15, with higher scores indicating greater interference.</p>
Relationship	Family Functioning Style Scale	Relationship dynamics	.69-.87	<p>Comprising 26 items, the FFSS measures relationship strengths and capabilities. The FFSS yields 13 individual subscale scores reflecting five dimensions. Participants respond to statements by indicating the extent of their agreement along a 5-point Likert scale ranging from 1 “<i>not at all like my relationship</i>” to 5 “<i>almost always like my relationship</i>”. Higher scores indicate the presence of higher levels of the relationship dynamic being examined within the relationship unit.</p>

### *Procedure*

Data were collected from expeditioners and partners prior to departure, during the absence period and upon return from Antarctica according to the schedule outlined in Table 3.

*Stage One:* Prior to departure the previously listed questionnaires were distributed to consenting participants in person, electronic or standard mail to collect data on individual, family, and organisational functioning at this time. Completed questionnaires were returned with the reply-paid envelopes provided, or in cases where distributed electronically by email.

*Stage Two:* During the Antarctic absence data was collected monthly from expeditioners using structured diaries in an electronic format. Partners remaining in Australia were concurrently assessed using pen and paper format. The diaries contained the HSCL-21 as well as qualitative items assessing positive and negative experiences to date and were completed on a monthly basis during the separation period.

*Stage Three:* Two months post-return to Australia structured interviews were conducted with consenting expeditioners and partners, with the data obtained being used to construct the cognitive representations of the reunion experience. The interviews were conducted either face-to-face or over the telephone, taking approximately 40 minutes to complete. Questionnaires were also used to collect data on individual, organisational, and relationship functioning as well as positive and negative change at this time.

*Stage Four:* Twelve months post-return to Australia structured interviews were again conducted with both expeditioners and partners, with the data again being used to construct cognitive representations of the reintegration experience. The degree of shift in schematic components between two and twelve months post-return provided a

Table 3

*Phases and Nature of Data Collection and Analysis Incorporated Within the Present Studies*

Stage	Methods	Measures	Analysis Strategies
Pre-Departure (Stage 1)	Self-report survey responses	Individual: COPE Inventory Life Orientation Test-Revised Hopkins Symptom Checklist-21 WHOQOL-BREF Personal Growth Initiative Organisational: Work-Family Interface Scale Relationship: Family Functioning Style Scale	Univariate ANOVAs Hierarchical Regression Analyses
Absence (Stage 2)	Semi-structured interviews Self-report survey responses	Assessed individual, organisational, and family factors Individual: Hopkins Symptom Checklist-21 WHOQOL-BREF	Interpretive Phenomenological Analysis Univariate/Repeated Measures ANOVAs
Reunion (Stage 3)	Qualitative survey questions Self-report survey responses	Assessed individual, organisational, and family factors Individual: Hopkins Symptom Checklist-21 Changes in Outlook Questionnaire Organisational: Work-Family Interface Scale Relationship: Family Functioning Style Scale	Interpretive Phenomenological Analysis Univariate/Repeated Measures ANOVAs Hierarchical Regression Analyses
Reintegration (Stage 4)	Semi-structured interviews Self-report survey responses	Assessed individual, organisational, and family factors Individual: Hopkins Symptom Checklist-21 WHOQOL-BREF Changes in Outlook Questionnaire Organisational: Work-Family Interface Scale Relationship: Family Functioning Style Scale	Interpretive Phenomenological Analysis Univariate/Repeated Measures ANOVAs Hierarchical Regression Analyses
	Semi-structured interviews	Assessed individual, organisational, and family factors	Interpretive Phenomenological Analysis

*Note:* WHOQOL-BREF = World Health Organisation Quality of Life Brief Inventory.

measure of adaptation. Questionnaires previously administered at Stage Three were readministered to both parties.

### 5.3 Analysis Strategies

Between-group differences on vulnerability and resilience variables measured across the employment experience were analysed by a series of univariate ANOVAs. A between-groups analysis was chosen to separate expeditioners from partners as the objective nature of experiences occurring throughout Antarctic employment differ at all time points, in that partners are not directly involved in the organisational components (e.g. pre-departure training, working ‘on the ice’) and are therefore less likely to be influenced by these.

This assumption was tested at all data collection points by conducting a correlational analysis which indicated that there were no significant correlations ( $p > .05$  for all comparisons) between expeditioner and partner quantitative response profiles. From a methodological perspective, expeditioners and partners differed on a key subject attribute variable (employment within the Australian Antarctic program) which contraindicated the use of within-subjects analyses. As single and partnered expeditioner response profiles were not significantly correlated ( $p > .05$  for all comparisons) they were also treated as between-subjects analyses.

The use of between-subjects analyses when examining differences between single and partnered expeditioners was also supported from a theoretical perspective in that researchers have demonstrated that the presence or absence of an intimate relationship can (among other things) affect cognitive processing and interpretation of challenging events (Egeland, Carlson, & Sroufe, 2009; Fagan & Polkovitz, 2007; Patterson & McCubbin, 1984; Showers & Zeigler-Hill, 2004).

Repeated Measures ANOVAs were used to assess within-group changes in these variables over time within each participant category. Hierarchical regression analyses were used to assess how resilience and vulnerability variables (obtained pre-departure), mediated by positive and negative experiences (during separation), predicted adjustment and adaptation (at both two and 12 months after return). The dependent variable was the amount of positive and negative change reported by participants, whilst the independent variables were those individual, organisational, and relationship factors measured at pre-departure, absence, reunion, and reintegration.

Using Means-End Chain Theory as a conceptual framework, semi-structured interviews were conducted with consenting expeditioners and partners (see Appendix E, H, & J). Means-end theory (Gutman, 1982; Olson & Reynolds, 1983) offers a practical metaphor to assess knowledge and meaning structures. The representation of cognitive structures in memory advocated by the theory is based on the acknowledgement that behavior may be linked to self. The central tenet of the theory is that meaning structures stored in memory consist of a chain of hierarchically-related elements. The chain starts with the behaviour components (attributes) and establishes a sequence of links with the self concept (personal values) through the perceived consequences or benefits produced by certain attributes of the behaviour. This forms a "means-end chain" in that attributes are the means by which the behavior provides the desired consequences or values, i.e. the ends. As such, Means-End Chain Theory enables articulation of the mechanisms underlying behaviours and thought patterns, thereby facilitating comprehensive understanding of psychological processes that facilitate adaptation

Adopting a Means-End approach, laddering techniques were used to elicit the positive and negative outcomes experienced by both parties, as well as the rationales that underpinned these outcomes throughout the Antarctic employment experience (Bagozzi &

Dabholkar, 2000; Grunert & Grunert, 1995; Pieters, Baumgartner, & Allen, 1995).

Integration of the reasoning processes articulated within this forum enabled identification of schematic representations of experiences in all participant categories.

The structured diaries distributed to expeditioners and partners provided additional insights into the nature of the Antarctic absence experience and how these circumstances contributed to restructuring of schemas over time. Interpretive Phenomenological Analysis (IPA) strategies as detailed below were then concurrently employed to further sort and categorise the data in order to identify salient themes. IPA reflects an inductive approach (Smith, 2004) and does not attempt to test specific hypotheses or prior assumptions (Reid, Flowers, & Osbon, 2003). As IPA reflects an inductive approach (Smith) and does not attempt to test specific hypotheses or prior assumptions (Reid, et al.) it enables integration of the reasoning processes articulated within the interviews thereby facilitating identification of schematic representations of experiences in all participant categories. Interpretive Phenomenological Analysis (IPA) strategies as detailed below were then concurrently employed to further sort and categorise the data in order to identify salient themes.

*Open coding.* Open coding refers to the process in which broad concepts are identified within the data (Strauss & Corbin, 1998). During the open coding process data was examined and compared for similarities and differences between response profiles. Microanalysis (the line by line, phrase by phrase, or word by word analysis necessary to generate initial coding concepts, their properties and dimensions) facilitated the open coding process. Concepts, or phenomena, found to be conceptually similar in nature are grouped under categories which are not influenced by prior assumptions. In this way coding is lead by data, not previous literature or theory (Charmaz, 2006).

*Axial Coding.* Whereas open coding segments data into separate pieces and distinct codes, axial coding works to reassemble the fractured concepts. Axial coding establishes links between categories, sub-categories and concepts. Thus whilst open coding aids generation of concepts and labels of phenomena, axial coding is used for explanation and to develop understanding of the identified themes.

*Selective Coding.* When saturation was achieved and no new response categories were identified, selective coding was undertaken (Dey, 1999). Selective coding focuses on identifying a core category, a central phenomenon around which all other categories are integrated (Strauss & Corbin, 1998). The core category exists in a theoretical framework, a matrix in which other categories and concepts are related (Dey). Selective coding acts to integrate the theory, refining categories and relationships (Dey). In this stage coding becomes further removed from the initial data producing a more generalisable model (Charmaz, 2006) which can then be used to inform intervention programs aimed at enhancing outcomes in the area of interest.

Inter-rater reliability addresses the consistency of the implementation of a rating system (in this instance, IPA) and determines the extent to which two or more individuals agree on the categories and relationships between these derived from qualitative data (Dey, 1999). In other words, inter-rater reliability refers to standardisation in the coding of qualitative interview data. This is an important consideration when subjectively coding data as it affects the generalisability of findings (Tinsley & Weiss, 1975). Inter-rater reliability is typically expressed in terms of correlational indices (Tinsley & Weiss), with Cohen's Kappa being the most widely used measure within the behavioural sciences (Perreault & Leigh, 1989). Kappa explicitly recognises the likelihood of chance agreement between raters and removes it from consideration according to the following equation:

$$K = (Fo - Fc) / (N - Fc)$$



Whereby  $N$ = number of judgements/codes made by each rater,  $F_o$ =the number of judgements/codes on which the raters agree, and  $F_c$ =the number of judgements/codes for which agreement is expected by chance (Tinsley & Weiss). Higher Kappa statistics indicate higher levels of agreement between independent raters, with an acceptable level being greater than .60 (Tinsley & Weiss).

#### 5.4 Ethical Considerations

This study was approved by the Australian Antarctic Division Ethics Committee (Human Experimentation) and the Southern Tasmanian Human Research Ethics Committee. This study was considered of low risk to participants as no significant physical effects (e.g. physical harm, pain or discomfort) or psychological effects (e.g. emotional distress, anxiety, or embarrassment), beyond the normal experience of everyday life were expected. Furthermore, the information obtained during the course of the study was not considered to be prejudicial to participants in any manner, that is, there were no employment, social, or legal implications from participating in the research.

Feedback from participants indicated that these assumptions were upheld, and that many participants found the nature of the study allowed them to develop further insights into both their individual and relationship functioning. Some participants also identified therapeutic benefit in participation through providing an avenue for their concerns to be aired without negatively impacting their employment prospects. If circumstances arose where a participant self-identified a requirement for formal interventions and supports the researcher would direct them to the ETFLO officer at the Australian Antarctic Division whose role encompasses referral to an Employee Assistance Program that can be accessed by expeditioners and partners alike. However,

this did not occur during the course of data collection even in cases of relationship dissolution (n=20). The reasons for this were that seven of these participants were already in contact with the ETFLO prior to reporting this experience, and the remaining 13 of these participants had obtained either informal or formal supports prior to contacting me and did not wish for ETFLO involvement.

No information that could identify any individual participant was disclosed to any person or organization, including the Australian Antarctic Division. Anonymity was protected by a de-identification procedure in which names were removed and replaced by code numbers, and only the combined results of all participants are reported. Preserving the anonymity of participants also required that no direct quotes be included within the discussion of qualitative data due to the likelihood of the language, colloquialisms, phraseology, or vernacular enabling identification of the individual who provided the information. This is of particular importance when considering that expeditioners spend long periods of time working with the same small group of individuals and can become attuned to such mannerisms. Furthermore, all raw data continues to be stored securely in the School of Psychology at the University of Tasmania and is not accessible to anyone except the researcher.

Participants were informed of these provisions in the information sheet provided to them when considering participation in the study (Appendix A). Furthermore, informed consent (Appendix B) was obtained to ensure participants were apprised of the nature of data collection and results feedback procedures, and remained aware of the voluntary nature of participation.

## CHAPTER 6

### THE PRE-DEPARTURE PERIOD

## 6.1 The Pre-Departure Period

In contrast to the large amount of knowledge regarding the expeditioner's experience of life in Antarctica, very little is known about the experience leading up to departure for Antarctic employment for expeditioners, and even less about the experience of partners during this period. The importance of including this period when researching adaptive processes stems from several factors including the differential nature and impact of experiences between expeditioners and partners during this period, the concurrent experience of both current and anticipatory stressors relating to changes in both individual and relationship spheres, and the prolonged period over which these challenges are negotiated.

One of the primary differences in the experience between expeditioners and partners relates to the degree of involvement and control over events experienced during this period. As the employed individual the expeditioner is involved in the formal preparatory training and social networking associated with the pre-departure period. In contrast, partners are largely excluded from this process due to pragmatic issues including time constraints and geographic dislocation. Additionally, it is arguable that due to higher levels of involvement in the pre-departure program, expeditioners will also experience higher levels of perceived control over their experiences compared to partners.

Another issue to consider is that whilst both expeditioners and partners are negotiating experiences related to the pre-departure program they are also likely to be cognitively and behaviourally preparing for future challenges associated with later stages of Antarctic employment – primarily the absence period which requires renegotiation of both work and family roles and the physical and psychological boundaries between these. The degree to which current and anticipatory challenges are simultaneously managed and the impact this has on well-being and performance during

the pre-departure period for expeditioners and partners has not been investigated to date. Similarly, the impact of prolonged exposure to these circumstances on both short and long-term functioning is also not well understood. This too is a potential oversight in understanding the mechanisms underlying both positive and negative change considering that the pre-departure period can in some circumstances exceed the length of time the expeditioner is physically working in Antarctica.

In summary, an understanding of the differential nature and impact of experiences of expeditioners and partners during this phase of Antarctic employment provides an avenue for measuring change over time (i.e. throughout the remaining Antarctic employment experience) as well as identifying the mechanisms by which this change occurs. In this way previous difficulties associated with selecting in desirable personnel rather than selecting out inappropriate personnel may be overcome.

Termed the “pre-departure period”, this phase of employment extends from when an expeditioner begins preparations for undertaking employment in Antarctica through to their physical departure from Australia. Whilst task specific training typically begins two to three months prior to departure, preparation for the experience may begin up to 18 months or more prior to the event when the prospective expeditioner first contemplates travelling to Antarctica in a professional capacity. Thus for some expeditioners the duration of the pre-departure period may exceed the length of time they spend working within Antarctica.

The nature and duration of the pre-deployment experience and implications for adaptation in subsequent phases of Antarctic employment for both expeditioners and partners are largely unknown. This appears to be a considerable oversight in light of research which has demonstrated the interactive nature of processes undertaken at different phases of employment experiences and subsequent impact on later functioning (Busuttil & Busuttil, 2001), and effective implementation of pre-departure intervention

programs in military populations to enhance functioning of both the deploying individual and their partners (Van Breda, 1999). From this perspective, the pre-departure period may represent a prime opportunity to effectively prepare expeditioners and their partners to maximise positive adaptation throughout the Antarctic employment experience thereby enhancing expeditioner functioning at the individual, relationship, and organisational level.

### *Expeditioner Experiences of the Pre-Departure Period*

The limited formal research that has investigated the pre-departure period within Antarctic populations typically contrasts Antarctic populations with non-Antarctic populations. Such research indicates that expeditioners report fewer subjective health complaints than normative populations (Grant et al., 2007), although this may be an artefact of the selection process eliminating those not physically and psychologically capable of undertaking Antarctic employment. It has also been demonstrated that expeditioners report higher levels of introversion, agreeableness, and intelligence (Gunderson & Nelson, 1966) whilst lower levels of anxiety (Butcher & Ryan, 1974), competitiveness, verbal aggressiveness, negative instrumentality (Musson, Sandal, Harper, & Helmreich, 2002) and subjective health complaints (Grant et al.) when compared to normative populations.

Additionally, the primary focus of such research has been to predict functioning during the Antarctic absence (thereby facilitating selection processes) as opposed to maximising functioning within the pre-departure period. Even less consideration has been afforded to the relationship between functioning during the pre-departure period and subsequent performance during the absence period. However, the nature of this relationship could be important as the psychological status of expeditioners (assessed prior to commencing pre-departure activities) could change as a result of their

experiences during this period, potentially influencing the degree of resilience or vulnerability demonstrated in subsequent stages of Antarctic employment.

Whilst some authors have identified personality variables associated with better adaptation within the Antarctic environment including emotion-focused coping, defensive hostility, openness (Grant et al.), and emotional stability (Doll & Gunderson, 1970) others argue that the identification of specific and stable personality traits predictive of effective Antarctic employment is difficult (Gunderson, 1974; Palinkas et al., 2000). However, the difficulty in identifying factors facilitative of positive adaptation (and therefore performance and well-being) demonstrated by expeditioners may be related to the methodological approaches employed in previous research designs.

Typically, such research has employed quantitative measures applied once during pre-departure and then again during the absence period. Compared to longitudinal designs incorporating both quantitative and qualitative approaches to data collection, such investigations do not allow for the mechanisms underlying change to be identified. Furthermore, they assume that the characteristics or traits demonstrated by expeditioners remain static between different phases of the Antarctic employment experience, although considering the relative paucity of research linking pre-departure experiences with well-being and performance outcomes 'on the ice', there is little evidence to suggest that this is the case.

Additionally, whilst research has identified that post-return evaluations of Antarctic employment demonstrate the existence of both positive (including increased self-reliance (Taylor, 1974), self-satisfaction (Cravalho, 1996), tolerance towards others, personal insight, achievement motivation, and self-efficacy (Suedfeld, 2002), and decreased long-term risk of hospital admissions compared to military personnel without Antarctic experience (Palinkas, 1986) and negative outcomes (including

relationship strain, perceived missed opportunities (Taylor, 1969; Taylor & McCormick, 1987), disturbed sleep patterns, declines in cognitive functioning, indecisiveness, emotional withdrawal, and communication difficulties (Popkin, Stillner, Hall, & Pierce (1978), the mechanisms by which these outcomes are achieved have also largely been overlooked. This again suggests that research investigating adaptation within Antarctic populations needs to focus not only on the individual phases of Antarctic employment, but also the relationships between them in order to facilitate positive outcomes in both the short and long-term.

In contrast, research on other populations experiencing vocational absences (e.g. military personnel, deep-sea fishers, oil-rig workers, expatriate managers) has focused on the unique challenges experienced during the pre-departure period that require successful negotiation in order to maximise individual performance and well-being whilst away. The influence of demographic characteristics, as well as individual, organisational, and relationship resources have been investigated in an effort to identify cohorts more vulnerable to distress as well as develop targeted intervention strategies to assist such individuals. In order to develop a comprehensive understanding of Antarctic employment experiences similar research agendas need to be incorporated within Antarctic research paradigms.

#### *Factors Influencing Pre-Departure Experiences*

There are a number of vocational roles which involve routine, prolonged separations from family including those associated with Antarctic employment, extended space missions, military assignments, remote mining operations, fishing operations, disaster response teams, off-shore drilling rigs, or those whose employment is in another city (Vormbrock, 1993). However, apart from being considered an analogue for extended space missions (Lugg, 1994; Lugg & Shepanek, 2009; Palinkas, Gunderson, Holland, Miller, & Johnson, 2000; Suedfeld & Weiss, 2000), there are few



similarities beyond prolonged separation from family between Antarctic and other types of employment.

Although there are hazards associated with the Antarctic environment, these differ significantly from the nature of hazards encountered by disaster response teams (e.g. high intensity, short-term exposure to transient extreme and unusual environments typically precipitated by natural hazards) as well as those engendered by human conflict (e.g. fluctuating intensity and exposure to extreme and unusual environments typified by purposeful infliction of morbidity and mortality upon those with whom the conflict lies) as is the case within military populations. Individuals employed within remote mining operations, fishing operations, off-shore drilling rigs typically experience shorter separations than those experienced by Antarctic populations and do not encounter the nature and degree of challenges posed by the Antarctic environment.

Furthermore, evacuation in the case of personal or family emergency is readily facilitated in most other employment settings – this is not the case for Antarctic expeditioners, particularly during the austral winter when climactic conditions largely prohibit travel to and from the continent which, at the best of times, is significantly more isolated and confined than those encountered within other populations who experience vocational separations (DeCamps & Rosnet, 2005; Lugg, 2004).

Considering the differences in the nature of employment tasks, destinations, and challenges, the focus and length of pre-departure training and other experiences associated with this period is also likely to differ between Antarctic and other employment. In particular, the length of the pre-departure period for Antarctic employees typically exceeds that associated with most other forms of employment and can even be longer than the actual absence being prepared for. The impact of the prolonged pre-departure period on expeditioner well-being and performance is not well

understood yet may have important implications for adaptation in later stages of the employment experience.

For these reasons findings derived from other populations may not readily generalise to the Antarctic employment experience, therefore investigation into the unique experience of Antarctic populations is warranted. If it is determined that there is considerable overlap between this and other forms of employment, recommendations and strategies derived from other populations may be applied to the Antarctic employment context to enhance well-being and performance. However, if it transpires that Antarctic employment is influenced by unique factors not demonstrated within other populations then application of such recommendations and strategies would be ill-founded and potentially detrimental to the health and well-being of expeditioners and their partners.

However, this leaves the difficulty of finding a population that is directly comparable to expeditioners from which to gain potential insights regarding the nature of pre-departure experiences. Thus until research can identify the nature of pre-departure experiences of expeditioners and qualify the degree of similarity and differences between these and other employments, findings from other contexts must be reviewed with caution. Research investigating the experiences of expatriate managers has identified a complex interrelationship between individual, organisational, and relationship level factors that influence the experience of and general functioning within the pre-departure period (e.g. Adler, 1991, 2007; Fish & Wood, 1997; Shaffer & Harrison, 2001).

Research conducted within military populations has also demonstrated the interdependence between these domains (e.g. Johnsen et al., 2007; Thompson & Smith, 2002). Considering that these populations are all negotiating a period preceding an extended vocational absence, it is arguable that this interrelationship between

individual, organisational, and relationship level factors may also be demonstrated within Antarctic populations. These factors are further discussed in terms of their individual and interdependent influences on pre-departure experiences of both the employed individual as well as their partners below. However, as previously outlined, due to differences in the intensity, nature, duration, and frequency of these different vocations and Antarctic employment it is likely that the specific experiences associated with the pre-departure period may vary.

### *Individual Factors*

During the pre-departure period numerous competing demands (e.g. spending time with family and friends competing with longer working hours; increased administrative demands such as organising powers of attorney and bill payments competing with leisure time) can place additional pressure on the departing individual which may result in distress (Johnsen et al., 2007), although considering research investigating resilience and growth outcomes that demonstrate the potential of both positive and negative outcomes following exposure to challenging situations (e.g. Linley & Joseph, 2004; Paton et al., 2008; Tedeschi & Calhoun, 1995, 1996), it is arguable that growth may also be experienced should these issues be successfully negotiated.

During this period the departing individual is often required to negotiate long work hours as well as complete a wide array of additional tasks including undertaking additional training to equip them for work abroad, completing wills and powers-of-attorney, and other administrative tasks (AAD, 2008; Adler & Castro; Johnsen et al.). At the same time, there is both a need and desire to attend to the needs of those they are leaving behind during their absence including partners, family and friends (Adler & Castro; Johnsen et al.). In consideration of these issues, it is not surprising that 15

percent of military families identify the pre-departure period as the most challenging aspect of the employment experience (NMFA, 2005).

Despite the inherent challenges of the pre-departure period, departing individuals identify numerous positive aspects during this time including excitement and anticipation of the upcoming experience and potential career advancement opportunities that may result (Johnsen et al., 2007; Siebler, 2003; van Breda, 1997). In an effort to identify factors that facilitate positive experiences during this period, investigators have examined the impact of demographic and personality characteristics, as well as coping styles on pre-departure health and well-being. Such research has demonstrated that within military populations experienced sojourners report significantly higher levels of both optimism and stress during the pre-departure period compared to non-experienced counterparts (Thompson, Gignac, & McCreary, 2004).

Research on Antarctic populations has also found differences in personality characteristics of experienced versus non-experienced expeditioners (Taylor & Shurley, 1971). Thompson et al. also examined the influence of relationship status on the experience of the pre-departure period and found no significant differences between single and partnered individuals on any pre-departure measure apart from commitment to their work role which was significantly higher in single individuals (Thompson et al.). Other researchers have focused on the influence of sex differences in the experience of the pre-departure period, demonstrating that women consistently reported lower levels of well-being and higher levels of anxiety compared to male counterparts (Godwin, 1996).

#### *Organisational Factors*

It has been identified that employees preparing for departure for extended vocational absences often describe significant increases in workload and associated stressors during the pre-departure period (Johnsen et al., 2007). One contributing factor

to this increased workload is the intensity and duration of training requirements undertaken during this period (Thompson & Smith, 2002). The duration of the training program for Antarctic expeditioners ranges from two weeks to three months, with wintering personnel required to undertake more comprehensive preparation than their summer counterparts (AAD, 2008).

The combined intensity and duration of pre-departure training schedules necessitate long working hours, and when not engaged in training or preparatory work expeditioners are required to assist with general tasks in support of expedition activities, such as preparing equipment and supplies (AAD, 2007). Thus there is limited time outside of work-level activities prior to departure for Antarctica. The impact of this on future adaptation of expeditioners during this and subsequent stages of employment is not well understood and requires further investigation.

However, potential insights may be gained from examining literature regarding experience of the work-family interface within other cohorts whom undergo extended vocational absences. Interference between work and non-work (e.g. individual and relationship) domains has been associated with a number of negative outcomes including decreased productivity, absenteeism, and poor morale (e.g. Bartone, Adler, & Vairkus, 1998) as well as other physiological, cognitive, social, emotional, and performance problems (e.g. Klein, 1996) which may result in increased global distress as identified in previous cohorts (Johnsen et al., 2007; Thompson & Smith, 2002) and reduced positive adaptation at this time.

More recently however, it has been identified that interference between work and family roles can facilitate positive outcomes at the individual level including increased levels of self-esteem associated with successful ability to negotiate multiple domains (Barnett & Hyde, 2001; Friedman & Greenhaus, 2000). Positive outcomes are most likely to occur when resources developed in one role facilitate improved

performance in the other through their influence on positive affect (Carlson, Kacmar, Holliday-Wayne, Grzywacz, 2005). Such findings further support the existence of interrelationships between multiple domains of functioning, and therefore the need to incorporate multidimensional approaches to the examination of employment experiences to ensure comprehensive models are developed.

### *Relationship Factors*

Research investigating the pre-departure period within military and non-military organisations provides support for the pre-departure period being one that poses unique demands on both the departing individual and loved ones remaining behind that require negotiation of practical and emotional issues (Siebler, 2003). It can engender significant negative symptoms (e.g., sadness, frustration, resentment, guilt, and other indices of interpersonal tension) which can result in both physical and emotional withdrawal between the departing member and their family, particularly romantic partners (Bey & Lange, 1974; Hill, 1949; Knapp & Newman, 1993; Siebler, 2003; van Breda, 1997). As a result, disrupted communication patterns within romantic relationships are frequently reported during this time (Dunn & Flemming, 2001; Kelly, et al., 2001).

In addition to the potential of such negative emotional states to reduce access to social support from family members and others close to the individual (whether they are an expeditioner or a partner), a protracted period in which negative emotions prevail can limit opportunities for future positive adaptation (Fredrickson, 2001; 2003). Thus it is arguable that expeditioner health and well-being is likely to change over the course of the pre-departure period, and as a result differ from levels present during the selection process. In turn, this would suggest that to ensure accurate knowledge of training and support needs required to enhance the likelihood of positive adaptation in both this and later phases of employment, assessment and monitoring needs to continue throughout

the experience as opposed to pre-selection screening and post-employment performance appraisals.

Furthermore, research has demonstrated that the challenges inherent within this period are often more difficult to negotiate for younger couples, as well as those whom have undergone frequent and repeated separations and may result in interpersonal conflict (Logan, 1987; Pincus et al., 1999, 2001; Siebler, 2003; Stafford, 2006). However, the impact of non-intimate relationships (such as those between family members and friends) has not been as well documented, and is an important factor to consider particularly for single expeditioners.

#### *Partner Experiences of the Pre-Departure Period*

Limited information regarding partner experiences of the pre-departure period exist outside of military contexts, with Flynn (2005) arguing that although the challenges for partners experiencing vocational absences have been acknowledged, they remain under-researched. Furthermore, most research has described qualitative experiences rather than whether quantitative differences exist within this population, arguing that the partner experience is typified by increasing levels of distress (e.g. Logan, 1987; van Breda, 1999), particularly when limited social support is available (van Breda). However, it has been argued that similar to patterns demonstrated by sojourners, partner experiences are multidimensional incorporating individual, organisational, and relationship level factors (Black & Stephens, 1989; Shaffer & Harrison, 1985; Shaffer, Harrison, Luk, & Gilley, 2000).

Specifically, it has been identified that the use of active coping strategies (Jensen & Shaw, 1996), availability of social support (Weins & Boss, 2006), acceptance, optimism, self-reliance (Patterson & McCubbin, 1984), and flexible relationship roles (Kelley et al., 1994) assist partners in successfully negotiating the pre-departure period

by minimising distress during this time. Conversely, a lack of prior experience of vocational absences, and pre-existing relationship distress has been shown to increase partner distress during the pre-departure period (Blount & Curry, 1992; Frankel et al., 1992; NMFA, 2005; Norwood, et al., 1996; Segal & Harris, 1993; Stafford & Grady, 2003; Weins & Boss, 2006; Wexler & McGrath, 1991).

Findings in regard to age-related differences in partner functioning during the pre-departure period have been less consistent, with some researchers identifying younger partners as being more distressed due to less experience and less solidified relationships (Blount & Curry, 1992; Frankel et al., 1992; NMFA, 2005; Norwood, et al., 1996; Segal & Harris, 1993; Stafford & Grady, 2003; Weins & Boss, 2006; Wexler & McGrath, 1991) whilst others have identified partners aged from 30-39 years experience higher levels of distress due to increased child-care commitments (van Breda, 1997).

### *Comparing Expeditioner and Partner Pre-Departure Experiences*

A growing body of evidence testifies to the influence that partner functioning can have on the sojourner at all stages of the employment experience in line with systems theories. It has been repeatedly demonstrated that partner experiences can negatively influence sojourner functioning as well as retention (Andreason, 2007; Black & Gregersen, 1991; Bonache & Brewster, 2001; Caligiuri, Hyland, Joshi, & Bross, 1998; Chew, 2004; Cooper & Sloan, 1985; Gregersen & Black, 1990; Harvey, 1985; McDonald, 1983; Shaffer & Harrison, 1998; Tung, 1981) leading some authors to argue that family dynamics should be assessed as part of the selection process (Chew, 2004).

Considering the impact of relationship level factors on expeditioner functioning, it is imperative to develop an understanding of partner experiences that



may, in turn, influence expeditioner performance. Additionally, it is important to identify whether differences exist between the needs of single and partnered expeditioners during pre-departure so that these can be better understood and their implications accommodated in proactive training and support interventions.

To date, only one published study has examined the concurrent experience of expeditioners and partners during the pre-departure period. Although limited to only 12 participants, Taylor and McCormick (1987) identified that neither participant category demonstrated high levels of distress during this period. Furthermore, results indicated that compared to expeditioners, partners reported higher levels of satisfaction regarding the employment decision and lower levels of anxiety regarding potential illness or injuries occurring during the absence period.

These findings appear to conflict with those reported in the military literature which identify that partners are more likely to experience lower levels of well-being compared to the departing soldier. One potential reason for these differences may be that the partners who undertook Taylor and McCormick's study were confident in their ability to negotiate the challenges of the absence period. Thus it would seem that although limited in generalisability considering the small sample size, Taylor and McCormick's data is consistent with the earlier argument that the experience of the pre-departure period is likely to differ between Antarctic and other populations and that this may be influenced by a combination of individual (e.g. self-efficacy, coping), organisational (i.e. the nature and duration of pre-departure tasks), and relationship (e.g. communication patterns) characteristics.

However, in order to identify and explore the Antarctic pre-departure experience as well as how this may influence adaptation in later stages of the employment experience it is necessary to conduct large-scale research that concurrently assesses the independent and interrelated nature of individual, organisational, and relationship

factors during this period from both the perspective of the expeditioner as well as their partner. In this way a comprehensive model of resilience and adaptation can be developed and incorporated within training programs to enhance the well-being and performance of both expeditioners and partners at this time, as well as in later stages of the employment experience.

### *The Current Study*

To gain a comprehensive understanding of the processes of adaptation occurring during the pre-departure period it is important to look beyond demographic characteristics that are not amenable to change, and expand the research focus to include malleable individual, organisational, and relationship factors. The benefit of such an approach is that the information gained from such analyses assists in determining both antecedents associated with adaptive and maladaptive outcomes, as well as identifying areas to focus intervention strategies (i.e. while age and sex are not amenable to change, individual and relationship coping strategies are).

Furthermore, if the pre-departure period has a significant impact on the well-being and the adaptive capacity of single expeditioners, partnered expeditioners, and partners, it will be important to include the consequences of experiences during this phase to the analysis of subsequent phases of the Antarctic employment experience particularly considering evidence that pre-departure distress levels are maintained for the first few months of the absence period (Hosek et al., 1996). Thus the current phase of the study aimed to identify and describe experiences of expeditioners and partners during the pre-departure period and how they influence quality of life and well-being during this time to determine whether this represents a factor that needs to be accommodated in future research agendas.

Knowledge of within and between participant category differences allows for targeted intervention strategies to be developed and provided to those individuals identified as more vulnerable to negative outcomes during this period. Concurrently, knowledge of factors demonstrated by individuals that promote successful negotiation of this period can be used to inform such intervention strategies. Thus a further aim of the current study aims to identify factors that promote psychological adaptation (as evidenced by high levels of quality of life satisfaction and well-being) in expeditioners and partners during the pre-departure period.

Although this research is exploratory in nature, due to apparent parallels between Antarctic employment and other populations who undergo vocational separations it may be argued that similar results regarding experience of the pre-departure period would be obtained. For this reason, it was hypothesised that:

*H1.* Partners would report significantly lower levels of quality of life satisfaction and well-being during the pre-departure period when compared to both single and partnered expeditioners.

*H2.* Demographic variables would engender significant within group differences on measures of quality of life satisfaction (as measured by the WHOQOL-BREF) and well-being (as measured by the HSCL-21). Specifically, it was hypothesised that:

*H2a.* Female expeditioners would report significantly lower levels of well-being compared to male expeditioners.

*H2b.* Experienced expeditioners would report significantly lower levels of well-being compared to their non-experienced counterparts. Considering that within Antarctic populations more experienced expeditioners also tend to be older, it was further hypothesised that younger expeditioners would report significantly higher levels of global functioning compared to older expeditioners.

*H2c.* Relationship status would not significantly influence quality of life satisfaction or well-being reported by expeditioners during the pre-departure period.

*H2d.* Non-experienced partners would experience significantly lower levels of quality of life satisfaction and well-being than experienced partners.

*H3.* Quality of life satisfaction (as measured by the WHOQOL-BREF) and well-being (as measured by the HSCL-21) would be predicted by a combination of individual, organisational, and relationship level factors within each participant category.

## 6.2 Method

### *Participants*

Eligible participants were those undertaking a minimum employment period of three consecutive months. The sample incorporated within the present study comprised 141 single expeditioners (107 male, 33 female) and 282 partnered expeditioners (197 male, 86 female) recruited from the Australian Antarctic program during the 2005/2006, 2006/2007, and 2007/2008 seasons. The mean age of single expeditioners who participated within the current study was 32.63 years (range 21-60 years; SD=9.22 years) whilst the mean age of partnered expeditioners was 36.22 years (range 23-58 years; SD=9.36 years). In order to obtain a more comprehensive understanding of experience of the pre-departure period upon existing intimate relationships, 149 partners (70 female, 24 male) of the recruited expeditioners also participated in this study. The mean age of partners participating in this study was 39.81 years (range 26-59 years; SD=9.66 years).

### *Materials*

#### *Global Measures*

*Quality of Life:* The World Health Organisation Quality of Life – Brief Inventory (WHOQOL-BREF) (WHOQOL Group, 1998) was utilised to assess individual perceptions of current quality of life. The WHOQOL-BREF assesses four conceptually distinct areas of functioning: physical, psychological, social relationships, and the environment. Participants responded to 26 statements by indicating the extent of their satisfaction along a 5-point Likert scale, ranging from 1 “*not at all*” to 5 “*very much*”. Scores are scaled in a positive direction so that higher scores indicate higher levels of quality of life. The authors report internal consistency estimates of .87 (physical), .81 (psychological), .68 (social relationships), and .81 (environment). Within the current study Cronbach’s alpha coefficients for the domains were as follows: Physical .85, Psychological .84, Social Relationships .68, and Environmental .71.

*Health and well-being:* The Hopkins Symptom Checklist – 21 (HSCL-21; Green, Walkey, McCormick, & Taylor, 1988) was used to ascertain the current level of health and well-being experienced by participants during the pre-departure period. The instrument comprises three subscales assessing performance difficulties, general distress, and somatic distress, as well as providing a total distress score. The instrument asks participants to report how stressed they have been within the past 7 days according to a 4-point Likert scale, in which 1= *not at all* and 4= *extremely*. Possible scores for each of the subscales range from 7 to 28, with higher scores indicating higher levels of distress. Total scores range from 21-84, with higher scores also indicating higher distress and lower levels of health and well-being. The authors report internal consistency estimates of; .80 (performance difficulties), .87 (general distress), .83 (somatic distress), and .89 (total distress). Cronbach’s alpha based on the data from the present study were .91, .87, .86, and .93 respectively.

### *Individual Factors*

*Demographics.* A demographics questionnaire requesting information regarding participant age (measured as a continuous variable in years), sex (measured as a dichotomous variable of male/female), relationship status (measured as a dichotomous variable of single/partnered), relationship length (if applicable; measured as a continuous variable measured in years), anticipated length of expeditioner absence (measured as a continuous variable measured in months), and whether the participant had previously experienced Antarctic employment (measured as a dichotomous variable of yes/no) was constructed for the present study (see Appendix C).

*Coping.* The COPE Inventory (Carver, Scheier, & Weintraub, 1989) was utilized to measure coping strategies generally employed by participants when dealing with challenging events. The COPE is a 60-item multidimensional coping instrument designed to assess 15 conceptually distinct methods of coping: active coping, positive reinterpretation and growth, seeking emotional support, seeking instrumental support, denial, acceptance, behavioural disengagement, alcohol and drug use, focus on venting emotions, humour, mental disengagement, planning, turning to religion, restraint coping, and suppression of competing activities. Participants responded to the statements by indicating the extent of their agreement along a 4-point Likert scale, ranging from 1 “*I usually don’t do this at all*” to 4 “*I usually do this a lot*”. The authors report internal consistency estimates of ranging from .45 (mental disengagement) to .92 (turning to religion). Cronbach’s alpha based on data from the present study for the subscales ranged from .79 (growth) to .87 (turning to religion).

*Personal Growth Initiative:* Despite the high risk nature of the work, recent research has found that the overall Antarctic experience is viewed positively by the majority of those who live and work there (e.g. Wood, Hysong, Lugg, & Harm, 2000). To investigate the precursors of such outcomes, an underlying theme of the project is to

identify adaptive capacities in expeditioners and partners. Consequently, predispositions to perceiving life change as offering growth potential was included and assessed using the Personal Growth Initiative Scale (PGIS) (Robitschek, 1998). The PGIS consists of nine statements rated along a 6-point Likert scale, ranging from 1 “*strong disagree*” to 6 “*strongly agree*”. Scores are calculated by summing the responses on the items, with higher scores indicating higher levels of personal growth initiative. The alpha statistic within the present study was .87.

*Optimism:* The Life Orientation Test-Revised (LOT-R; Scheier, Carver, & Bridges, 1994) was utilized to measure participant optimism. The LOT-R consists of 10 coded items; 3 statements described in a positive manner, 3 statements described in a negative manner, and 4 non-scored items. Participants respond to the statements by indicating the extent of their agreement along a 5-point Likert scale, ranging from 0 “*strongly agree*” to 4 “*strongly disagree*”. Scores are calculated by summing responses to statements, except those recorded on the non-scored items. Scores obtained on the LOT-R range from 0-24, with higher scores indicating higher levels of optimism. The authors report a reliability estimate of .78. Within the present study the alpha statistic for the scale was .89.

#### *Organisational Factors*

*Family-Work Interface:* To gain an understanding of the relative contribution of work level factors to the experience of the pre-departure period, participants completed the Work-Family Interference and Family-Work Interference Scales (WFI and FWI) (Carlson & Frone, 2003). These scales were used to assess the degree to which responsibilities within the work domain impinged upon home duties (work interference with family), as well as the degree to which responsibilities associated with the home environment impinged upon work level duties (family interference with work).

Specifically, these scales assessed four domains of the family-work interface: externally generated work interference with family (External WIF), externally generated family interference with work (External FIW), internally generated work interference with family (Internal WIF), and internally generated family interference with work (Internal FIW). Expeditioners were asked to respond in reference to their own current Antarctic employment whilst partners were asked to respond in terms of the expeditioner's employment. All participants responded to 12 statements by indicating the extent of their agreement along a 5-point Likert scale, ranging from 1 "not at all" to 5 "almost always". Possible scores for each Interference Scale range from 3 to 15, with higher scores indicating greater interference. The authors report internal consistency estimates of .84 for External WIF, .80 for External FIW, .79 for Internal WIF, and .73 for Internal FIW. Cronbach's alphas based on data from the present study were .88, .80, .83, and .74 respectively.

#### *Relationship Factors*

*Relationship Dynamics:* Relationship dynamics were assessed using both the original (for single expeditioners) and a modified version (for partnered expeditioners and partners) of the Family Functioning Style Scale (FFSS) (Trivette, Dunst, Deal, Hamer, & Propst, 1990). The original scale was constructed specifically for use with families, and therefore content items on the instrument needed to be reworded to make them applicable for use within romantic relationships. For example, an item within the FFSS "we make personal sacrifices if they help our family" was changed to "we make personal sacrifices if they help our relationship" (Appendix D).

Comprising 26 items, the FFSS measures relationship strengths and capabilities on five dimensions; interactional patterns, relationship values, coping strategies, relationship commitment, and resource mobilisation. The FFSS yields 13 individual subscale scores reflecting the five dimensions listed above; commitment,



appreciation, time, sense of purpose, congruence, communication, role expectations, coping I, coping II, problem solving, positivism, flexibility, and balance. Participants responded to statements by indicating the extent of their agreement along a 5-point Likert scale ranging from 1 “*not at all like my relationship*” to 5 “*almost always like my relationship*”. Single expeditioners were asked to complete the scale in relation to their family whilst partnered expeditioners were asked to complete the scale in regarding their romantic relationship dynamics. The authors do not report internal consistency estimates, however Cronbach’s alpha for the scales used within the present study ranged between .69 (appreciation) and .87 (communication).

The scales were placed in a counterbalanced order with the demographic questionnaire always the initial item in the package so as to control for any order effects of scale presentation. Due to the number of scales incorporated within the study, not all possible orderings of scales were used. For those counterbalanced orders that were used, there was no significant difference in the scores of any of the measures. Thus data were combined across order for all subsequent analyses.

#### *Semi-structured Interview:*

A semi-structured interview (Appendix E) provided participants the opportunity to identify experiences relevant to the pre-departure process not otherwise assessed, thereby allowing new variables regarding the pre-departure experience to emerge. A series of open-ended questions assessing positive and negative experiences post-RTA, factors that facilitated effective and ineffective adaptation and the level of external assistance required at this time were used to supplement quantitative data and build a more comprehensive understanding of the reunion experience.

#### *Procedure*

Expeditioners were made aware of the study through verbal presentations delivered during their pre-departure training program. Additionally, all expeditioners

received an email detailing the aims of the study and participation requirements. As partners were not present during the pre-departure training program, expeditioners were requested to inform their partners of the study and put them in contact with the researchers if they were interested in participating.

Prior to departure for Antarctica the previously listed questionnaires were distributed to consenting participants. The items contained in the questionnaires completed by partners were identical to those completed by expeditioners. Expeditioner and partner questionnaires were mailed and returned separately. Additionally, participants were asked to indicate whether they would be willing to participate in an interview based on their experiences at this time. Participants who consented to interviews were then contacted by phone or met the researcher at a mutually convenient location to undertake the semi-structured interview.

### 6.3 Results

#### *Analysis Strategies*

Preliminary analyses examined differences in the experience of the pre-departure period for each participant category between each cohort (2005/2006, 2006/2007, 2007/2008 seasons). As these analyses revealed no significant differences on measures of global functioning or mode of transportation (ship versus air-based personnel movement), all subsequent analyses were conducted on combined data sets across these years.

Subsequent analyses examined differences between and within the participant categories of single expeditioners, partnered expeditioners, and partners to identify the impact of these on measures of life satisfaction (WHOQOL-BREF) and well-being (HSCL-21). The norms against which these scores are compared relate to a non-clinical community sample derived from Australia (WHOQOL-BREF) and New Zealand

(HSCL-21). Whilst this provides for an interesting comparison, it is important to consider the unique nature of the population under investigation in that they are largely self-selected, high functioning individuals who are currently undergoing multiple challenges associated with impending departure to one of the most extreme and unusual environments on earth.

Thus although the normative comparisons are more for interest, such analyses can also determine whether norms such as these are appropriate for use when working with Antarctic populations. This is an important consideration as non-clinical norms are currently used to gauge psychological suitability for selection within the program.

#### *Between Group Differences*

In order to test the first hypothesis, that partners would report significantly lower levels of quality of life satisfaction during the pre-departure period when compared to both single and partnered expeditioners, a series of univariate ANOVAs were performed to determine whether group differences existed on each of the WHOQOL-BREF (life satisfaction) domain scores.

As reported in Table 4 these analyses identified that compared to the normative sample, all participant categories within the current study reported significantly lower levels of satisfaction with their physical health during the pre-departure period when compared to normative data reported by Murphy, Herrman, Hawthorne, Pinzone, and Evert (2000) which relate to a non-clinical Australian community sample ( $p < .001$  for all comparisons).

Regarding satisfaction within the psychological domain, both single and partnered expeditioners reported significantly higher scores than partners and the normative sample ( $p < .001$  for all comparisons). Whilst there were no significant differences in relationship satisfaction scores across the participant categories, both

single and partnered expeditioners reported significantly higher levels of satisfaction with their environment than partners and the normative sample ( $p < .001$  for all comparisons).

#### *Within Group Differences*

In order to test the second hypothesis predicting that demographic variables would engender significant within group differences on measures of quality of life satisfaction (as measured by the WHOQOL-BREF), a series of univariate ANOVAs were performed.

##### *Single Expeditioners*

##### WHOQOL-BREF Psychological domain

A 2[sex: male, female] x 4(age category: 20-59, 30-39, 40-49, 50+) univariate ANOVA identified a significant sex by age interaction for single expeditioners,  $F(3, 132) = 4.53$ ,  $p < .01$  ( $\eta^2 = .26$ ) on the level of psychological health satisfaction reported, such that post-hoc analyses identified within the 40-49 year age category single female expeditioners reported significantly higher levels of satisfaction with psychological health compared to their male counterparts ( $p < .001$ ).

##### WHOQOL-BREF Environment domain

A 2[sex: male, female] x 4(age category: 20-29 years, 30-39 years, 40-49 years, 50+ years) univariate ANOVA identified a significant interaction between age and sex for single expeditioners,  $F(3, 132) = 3.71$ ,  $p < .05$  ( $\eta^2 = .08$ ) on the level of environmental satisfaction reported. Post-hoc analyses identified that males aged 40-49 years reported significantly lower scores than females within this age category, whilst within the 20-29 year age category females reported significantly lower levels of satisfaction than males ( $p < .01$  for all comparisons).

Table 4

*Comparing Quality of Life Satisfaction at Pre-Departure Between Single Expeditioners, Partnered Expeditioners, and Partners*

	Single		Partnered		Partners		Norms	
WHOQOL-BREF	Expeditioners		Expeditioners					
Domain	M	SD	M	SD	M	SD	M	SD
Physical	75.03 <sup>a</sup>	14.31	75.15 <sup>a</sup>	14.01	74.09 <sup>a</sup>	15.38	80.00 <sup>b</sup>	17.10
Psychological	75.65 <sup>a</sup>	12.42	76.38 <sup>a</sup>	11.82	70.02 <sup>c</sup>	11.85	72.60 <sup>c</sup>	14.20
Relationship	70.12 <sup>c</sup>	17.94	72.82 <sup>c</sup>	19.97	73.32 <sup>c</sup>	9.73	72.20 <sup>c</sup>	18.50
Environment	80.56 <sup>b</sup>	10.60	81.00 <sup>b</sup>	10.74	76.05 <sup>a</sup>	11.29	74.80 <sup>a</sup>	13.70

*Note:* Means not sharing the same subscript are significantly different

### *Partnered Expeditioners*

#### WHOQOL-BREF Psychological Domain

A 2[sex: male, female] x 4(age category: 20-29 years, 30-39 years, 40-49 years, 50+ years) univariate ANOVA identified a significant interaction between age and sex for partnered expeditioners,  $F(3, 239)=5.08$ ,  $p<.001$  ( $\eta^2=.03$ ) on the level of psychological health satisfaction reported. Post-hoc analyses identified that within the 20-29 year age category male partnered expeditioners reported significantly higher levels of satisfaction with psychological health than their female counterparts. The same pattern of results was demonstrated within the 50+ year age category ( $p<.001$  for all comparisons).

#### WHOQOL-BREF Environment Domain

A 2[sex: male, female] x 4(age category: 20-29 years, 30-39 years, 40-49 years, 50+ years) univariate ANOVA identified a significant interaction between age and sex for partnered expeditioners,  $F(3, 239)=8.48$ ,  $p<.001$  ( $\eta^2=.06$ ) on the level of environmental satisfaction reported. Within the 20-29 year age category male partnered expeditioners reported significantly higher levels of environmental satisfaction than their female counterparts. The same pattern of results was also evident within the 50+ year age category ( $p<.001$  for all comparisons).

### *Partners*

#### WHOQOL-BREF Psychological Domain

A 2[sex: male, female] x 4(age category: 20-29 years, 30-39 years, 40-49 years, 50+ years) univariate ANOVA identified a significant interaction between partner age and sex,  $F(2, 142)=9.01$ ,  $p<.001$  ( $\eta^2=.11$ ) on the level of satisfaction with psychological health satisfaction reported. Within the 40-49 year age category male partners reported significantly higher levels of psychological health satisfaction than their female counterparts. The same pattern of results was demonstrated within the 50+ year age category ( $p<.001$  for all comparisons).

### *Between Group Differences*

In order to test the second component of hypothesis 1, that partners would report significantly lower levels of well-being during the pre-departure period when compared to both single and partnered expeditioners, a series of univariate ANOVAs were performed. As reported in Table 5, at pre-departure partners reported significantly higher levels of somatic distress and performance difficulties when compared to single expeditioners, partnered expeditioners, and norms reported by Deane, Leathem, and Spicer (1992) which relate to a non-clinical community sample of New Zealand residents. Additionally, partners reported significantly higher levels of general distress and total distress when compared to single and partnered expeditioners; however significantly lower levels than norms.

### *Within Group Differences*

In order to test the second hypothesis predicting that demographic variables would engender significant within group differences on measures of well-being (as measured by the HSCL-21) a series of univariate ANOVAs were performed. These analyses identified that there were no significant differences in the levels of well-being reported as a function of demographic variables for any of the participant categories.

Table 5

*Comparing Well-Being at Pre-Departure Between Single Expeditioners, Partnered expeditioners, and Partners*

	Single		Partnered		Partners		Norms	
	Expeditioners		Expeditioners					
Domain	M	SD	M	SD	M	SD	M	SD
Somatic Distress	8.86 <sup>a</sup>	1.87	9.03 <sup>a</sup>	2.07	9.89 <sup>b</sup>	2.12	9.13 <sup>a</sup>	2.52
Performance Difficulties	11.24 <sup>c</sup>	2.97	11.19 <sup>c</sup>	3.20	11.70 <sup>d</sup>	3.09	11.09 <sup>c</sup>	.32
General Feelings of Distress	10.14 <sup>b</sup>	3.70	9.53 <sup>b</sup>	2.82	11.51 <sup>d</sup>	3.33	15.37 <sup>e</sup>	5.76
Total Score	30.23 <sup>f</sup>	6.54	29.76 <sup>f</sup>	6.54	33.10 <sup>g</sup>	6.43	35.58 <sup>h</sup>	8.52

*Note:* Means not sharing the same subscript are significantly different



### *Predicting Quality of Life Satisfaction*

In order to test the third hypothesis that quality of life satisfaction (as measured by the WHOQOL-BREF) and well-being (as measured by the HSCL-21) would be predicted by a combination of individual, organisational, and relationship level factors within each participant category a series of hierarchical regression analyses were performed. A series of backward step-wise regression equations were performed to assess the relative contribution of individual (optimism, PGI, coping), organisational (work-family interface measures), and relationship (revised FFSS) factors in the prediction of expeditioner life satisfaction (WHOQOL-BREF) and well-being (HSCL-21) during the pre-departure period (see Appendix F & G respectively).

The variables entered were those identified as being significantly correlated with each outcome variable for each participant category. Demographic variables were not included in these equations as the focus was to identify factors that were malleable and could be addressed through intervention strategies designed to maximise expeditioner positive experiences during the pre-departure period. Results of the stepwise regression analyses are reported in Table 6.

Table 6

*Backwards Stepwise Regression Results for Prediction of Quality of Life Satisfaction at Pre-departure*

WHOQOL-BREF	Participant	Adjusted R <sup>2</sup>
Domain	Category	
Physical	Single Expeditioner	.21
	Partnered Expeditioner	.09
	Partner	.81
Psychological	Single Expeditioner	.35
	Partnered Expeditioner	.13
	Partner	.87
Relationship	Single Expeditioner	.09
	Partnered Expeditioner	.18
	Partner	.96
Environment	Single Expeditioner	.18
	Partnered Expeditioner	.07
	Partner	.95

*Single Expeditioners*

For single expeditioners, 21 percent of the variance in quality of life within the physical domain was predicted by a combination of individual, organisational, and relationship level factors. In contrast, quality of life within the psychological and relationship domains were predicted by a combination of individual and relationship level factors whilst a combination of individual and organisational factors influenced the quality of life within the environmental domain.

Within the physical domain, the use of problem solving strategies at the relationship level, External FIW (organisational level factor), and the use of humour (individual level factor) all facilitated higher quality of life. However, External WIF (organisational level factor) and striving to attain balance between work and family roles (relationship level factor) negatively impacted satisfaction within this domain suggesting a complex relationship between work and relationship level factors on individual physical health satisfaction (Appendix F).

The only predictor variable shown to negatively impact quality of life within the psychological domain was relationship role expectations which assess the degree to which expectations of relationship roles (e.g. completion of expected domestic duties, provision of support, and participation in decision making) are being fulfilled. However, appreciation within the relationship enhanced functioning in this domain as did optimism (LOT-R; individual level factor), personal growth initiative (PGI; individual level factor), and individual level coping strategies of suppression and behavioural disengagement (COPE BD; individual level factor) (Appendix F).

Although the regression equation predicting satisfaction/quality of life within the relationship domain identified that the individual, organisational, and relationship variables assessed within the pre-departure period had the least predictive utility in terms of quality of life satisfaction within the relationship domain it was identified that individual level planning and relationship level social support (FFSS Cope II) facilitated functioning in this domain (Appendix F).

A complex relationship between individual coping strategies and quality of life within the environment domain emerged within the single expeditioner category such that restraint (individual level factor) and the use of alcohol and other substances (COPE AD; individual level factor) negatively impacted functioning whilst suppression (individual level factor) and mental disengagement (COPE MD; individual level factor)

facilitated functioning in this domain. As was evident within the physical domain, External WIF (organisational level factor) negatively impacted quality of life within the environment domain (Appendix F).

#### *Partnered Expeditioners*

Physical and psychological quality of life indices for partnered expeditioners were predicted by a combination of individual and relationship level factors, but not partner response profiles. However, the only common predictor variable between the two domains was personal growth initiative, and in both cases served to increase satisfaction with quality of life in the respective domain. With regards to the physical domain, communication (relationship level factor), personal growth initiative (individual level factor), and behavioural disengagement (BD; individual level factor) all enhanced satisfaction whilst the use of humour (individual level factor) decreased satisfaction (Appendix F).

Within the psychological domain, suppression (individual level factor), optimism (individual level factor), personal growth initiative (individual level factor), and avoidance coping (Cope I; relationship level factor) all enhanced satisfaction with quality of life whilst the use of active coping strategies (individual level factor) decreased satisfaction (Appendix F).

In contrast, environmental quality of life was predicted by individual and organizational factors. The use of mental disengagement as a coping strategy (individual level factor) enhanced satisfaction in this domain whilst the experience of external work interference with family (organizational level factor) decreased satisfaction (Appendix F).

Relationship quality was the only domain predicted by a combination of individual, organizational, and relationship level factors. Engaging positive reinterpretation and growth (individual level factor), social support (relationship level

factor), religiosity (individual level factor), and external family interference with work (organizational level factor) all served to increase satisfaction in this domain whilst the use of humour (individual level factor) and balance (relationship level factor) decreased satisfaction (Appendix F).

### *Partners*

Within the partner sample the only quality of life domain not to be predicted by a combination of individual, organisational, and relationship level factors was the physical domain which was predicted by a combination of individual and relationship level factors. Within this domain the individual level factors of personal growth initiative, seeking emotional social support, and the use of humour all increased satisfaction, as did the relationship level factors of positivism, purpose, and problem solving. In contrast, the relationship level factor of flexibility negatively impacted satisfaction (Appendix F).

Across the domains of psychological, relationship, and environment satisfaction it was identified that the relationship level factor of commitment consistently decreased satisfaction as did avoidance coping (Cope I). In contrast, personal growth initiative increased satisfaction in each of these domains. Of interest is the differential impact of the work-family interface (organisational level factor) in that external work interference with family was conducive for satisfaction whilst internal family interference with work was not.

### *Predicting Well-Being at Pre-Departure*

In order to assess the degree to which individual, organisational, and relationship level factors contributed to the prediction of well-being (as measured by the HSCL-21) a series of backward stepwise regression equations were performed. These analyses

identified that the ability to predict well-being at pre-departure for all participant categories was negligible ( $R^2$  values ranged from 0 to .05; see Appendix G).

Results indicated that there were clear differences in the relative contribution of individual, relationship, and organizational factors to single expeditioner, partnered expeditioner, and partner quality of life satisfaction and well-being, particularly in terms of the limited ability of these variables to predict partnered expeditioner distress. To further inform the nature of these processes, content analyses of qualitative interviews were undertaken using Interpretative Phenomenological Analysis (IPA; Smith & Osbon, 2003).

This method involves reviewing the qualitative data, identifying thematic categories, and searching interview transcripts for occurrences of these categories (Robson, 2002). As IPA reflects an inductive approach (Smith, 2004) and does not attempt to test specific hypotheses or prior assumptions (Reid, Flowers, & Osbon, 2003) it enables integration of the reasoning processes articulated within the interviews thereby facilitating identification of schematic representations of experiences in all participant categories. Interpretive Phenomenological Analysis (IPA) strategies were then concurrently employed to further sort and categorise the data in order to identify salient themes.

Coding of the interviews was undertaken, and inter-rater reliability was assessed by comparing the identified emergent themes with coding undertaken by a psychologist experienced in qualitative analysis,  $Kappa=.87, p<.001$ .

### *Qualitative Descriptions of Pre-Departure Experiences*

As was demonstrated in regards to quantitative analyses, comparison of 95 percent confidence intervals identified that there were no significant differences in the relative endorsement or nature of qualitative themes reported during pre-departure as a

function of ship versus air-based transportation. For this reason qualitative data was collapsed across these categories.

Qualitative themes identified within pre-departure interviews with single expeditioners and partnered expeditioners are reported in Tables 7 and 8 respectively. Due to the high degree of similarity between them, discussion of the themes will be integrated. The emergent themes derived from these interviews were categorised into the ordinate themes of work, relationship, individual, and other factors. The subsequent constituent themes and frequency of endorsement indicate that work, relationship, and individual themes are all highly salient factors influencing the pre-departure experience for both single and partnered expeditioners and that it is often difficult to manage these (competing) demands. Furthermore, there was little differentiation in the frequency of endorsement of constituent themes within each ordinate theme. It is also important to note that the ratio of positive to negative constituent themes.

Within the ordinate theme of work, there was approximately equal identification of positive and negative constituent themes (3:2) for both participant categories. A similar pattern was demonstrated within the individual ordinate theme (1:1 for both participant categories). In contrast, within the ordinate theme of relationship there was identification of more negative than positive constituent themes (2:1) for partnered expeditioners, but only positive themes reported by single expeditioners. Another point of interest is that it appears partnered expeditioners overestimated the negative influence of pre-departure challenges on partner well-being as there were marked discrepancies between qualitative response profiles regarding this issue.

Table 7

*Themes Identified Within Single Expeditioner Pre-Departure Interviews*

Superordinate Theme	Ordinate Theme	Constituent Theme	Frequency of Endorsement (%)
Positive	Work	Importance of pre-departure preparation	94
		Enjoyment of training program	87
		Social support from colleagues	75
	Relationship	Celebrations	41
	Individual	Personal development	94
Negative	Work	High workload including long work hours	93
		Frustration with training schedule	73
	Individual	Fatigue	29
	Other	Difficulty achieving balance between roles	51

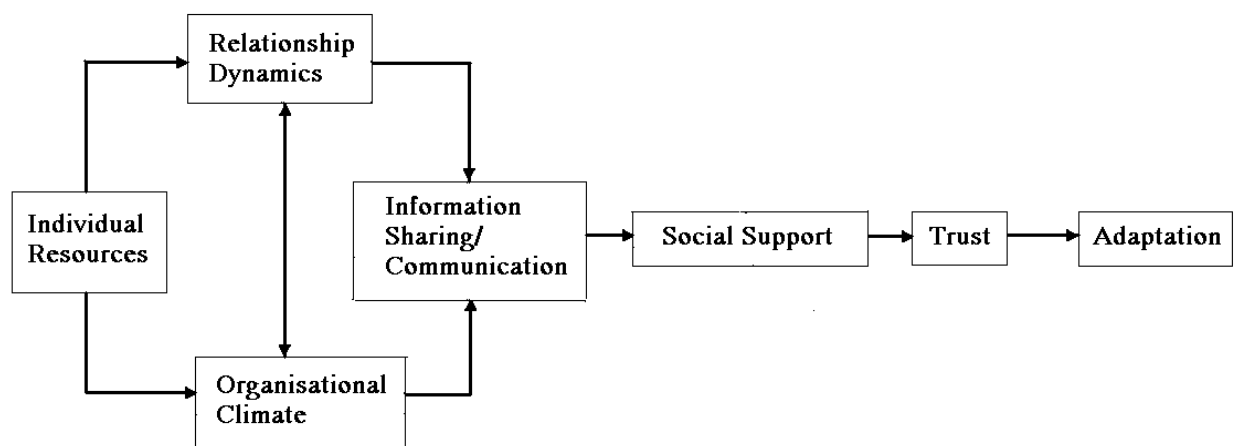


Table 8

*Themes Identified Within Partnered Expeditioner Pre-Departure Interviews*

Superordinate Theme	Ordinate Theme	Constituent Theme	Frequency of Endorsement (%)
Positive	Work	Importance of pre-departure preparation	93
		Enjoyment of training program	77
		Social support from colleagues	68
	Relationship	Importance of partner support	88
	Individual	Personal development	96
Negative	Work	High workload including long work hours	93
		Frustration with training schedule	61
	Relationship	Concern for partner	73
		Guilt	69
	Individual	Fatigue	37
	Other	Difficulty achieving balance between roles	79

In order to develop a model articulating the mechanisms underpinning adaptation during the pre-departure period interview transcripts were further analysed to determine links between the ordinate themes of work, relationship, and individual. The resultant model of factors influencing pre-departure adaptation for single and partnered expeditioners is presented in Figure 2.



*Figure 2.* Model of factors influencing single and partnered expeditioner adaptation to the pre-departure period.

*Individual Resources:* Individual resources primarily related to the expeditioner's pre-existing psychological attributes and whether these facilitated positive or negative experiences. Individual resources that facilitated positive experiences included responses reflecting future-oriented optimism (belief that Antarctic employment would be a positive experience), positive reframing (e.g. emphasising the importance and enjoyment of pre-departure training as opposed to the high workload), and self-efficacy (belief in personal competency to successfully negotiate period). It was also evident that those expeditioners (both single and

partnered) who had experienced previous Antarctic employment believed this to be an important individual resource that facilitated better functioning at this time.

Of note however was that expeditioners explicitly stated that their own individual resources influenced their perceptions of and participation in development of the organisational climate, as well as the nature of relationship dynamics (both intimate and platonic) at this time. In other words, if they felt optimistic, used positive reframing, and had high levels of self-efficacy they believed themselves as having an enhanced capacity to contribute to positive organisational and relationship experiences, whereas if they had insufficient resources then they would not have any left over to contribute to these other domains.

*Relationship Dynamics:* Regardless of relationship status, both single and partnered expeditioners identified that the nature of relationship dynamics (e.g. relationship satisfaction, support for their work, valence of interactions) was an important aspect of their pre-departure experience. Positive relationship dynamics were seen as facilitative of adaptation for both the expeditioner and their loved ones, whereas negative relationship dynamics were seen to negatively impact adaptation processes as they interfered with fully engagement in relationship and work domains until rectified. Additionally, expeditioners emphasised that relationship dynamics often spilled over into work experiences as well as influenced the degree of communication/information sharing that was occurring during the pre-departure period.

*Organisational Climate:* The organisational climate referred to satisfaction within the work domain, the degree to which expeditioners felt they were active in shaping their work experiences, workload, and the overall culture of the organisation. Expeditioners emphasised that negative experiences associated with organisational climate were engendered if they felt that the organisation was overlooking their

opinions, experience, or expertise in an area in which they could be applied to achieve effective, efficient, and positive outcomes and potentially reduce workload at this time.

In contrast, aspects of the pre-departure training program in which they felt actively engaged and valued participants were perceived to be facilitative of positive experiences – often this entailed being provided with sufficient and relevant information. Regardless of relationship status, both single and partnered expeditioners identified that work demand often spilled over into the relationship domain during the pre-departure period.

*Information Sharing/Communication:* Information sharing/communication referred to the degree of information being provided to expeditioners. Expeditioners indicated that provision of accurate, relevant, and timely information from the organisation was an important factor in managing affect during the pre-departure period. They also indicated that the source of information varied according to the type of information – often first-time expeditioners relied on experienced expeditioners for more basic information, whereas the organisation was relied upon for information regarding issues such as departure dates.

However, they also indicated that communication with important others (i.e. partners, family, and friends) also affected experiences at this time, and that often communication frequency increased but quality decreased during this time. Regardless of whether communication was occurring with the work or relationship domain, it was identified as facilitative of recruiting social support for expeditioners during the pre-departure period.

*Social Support:* Single and partnered expeditioners emphasised the importance of social support from both colleagues and partners/family/friends during the pre-departure period to help negotiate the unique challenges (e.g. high workload, imbalance between work and non-work roles) associated with this period. Provision of and

satisfaction with this social support facilitated the development of trust that the individual expeditioner, their peers, and their loved ones could negotiate this and future stages of the Antarctic employment experience.

*Trust:* Trust referred to the degree to which expeditioners were confident in their own ability, their colleagues' ability, and the ability of their loved ones to successfully negotiate this and future stages of the Antarctic employment experience. Expeditioners identified that this trust was based on the quality of social support, information provision, relationship dynamics, organisational climate, and personal resources. Without this trust expeditioners indicated that they would not be confident in their ability to negotiate future periods of the Antarctic employment experience due to worry and doubt about whether they would be supported or safe.

### *Partners*

Qualitative themes identified within pre-departure interviews with partners are reported in Table 9. The emergent themes derived from these interviews were similarly categorised into the ordinate themes of work, relationship, and individual factors. The subsequent constituent themes and frequency of endorsement indicate that there are fewer and much greater differentiation between constituent themes within categories compared to partnered expeditioners. Additionally, the nature of the constituent themes differs from those reported by partnered expeditioners.

The constituent themes and frequency of endorsement indicate that work, relationship, and individual themes are all highly salient factors influencing the pre-departure experience for partners. Again it is important to note that the ratio of positive to negative constituent themes. Within the ordinate theme of work, there was higher endorsement of negative than positive constituent themes (2:1). Within the ordinate theme of relationship, there was higher endorsement of negative constituent themes,

however there was also identification of themes that were concurrently positive and negative (testing of relationship strength). A similar pattern was identified within the ordinate theme of individual where one negative constituent theme was identified, as was one constituent theme that was concurrently positive and negative (planning for expeditioner's absence).

Again interview transcripts were further analysed to determine links between the ordinate themes of work, relationship, and individual. The resultant model of factors influencing pre-departure adaptation for partners is presented in Figure 3.

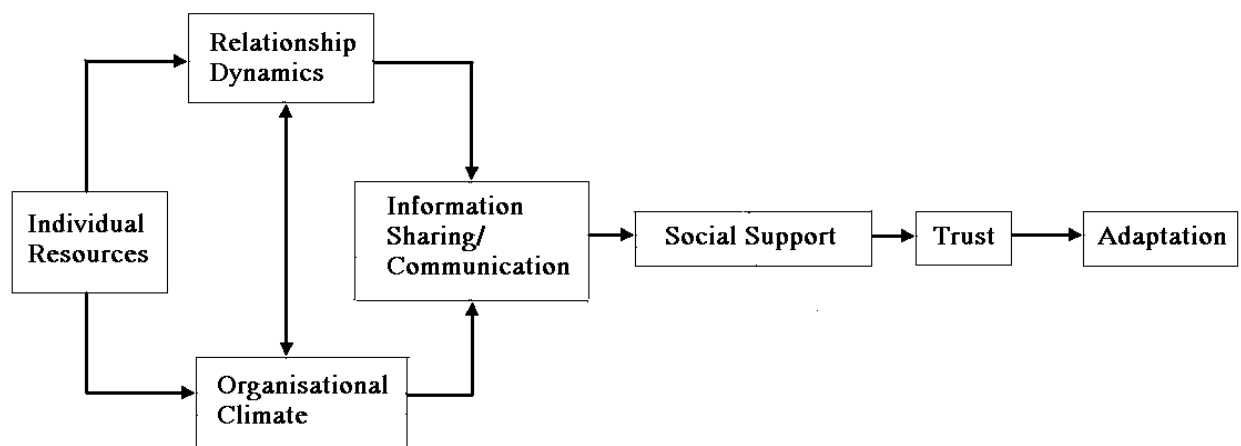


Figure 3. Model of factors influencing partner adaptation to the pre-departure period.

*Individual Resources:* As was demonstrated within the expeditioner sample, Individual resources primarily related to partner's pre-existing psychological attributes and whether these facilitated positive or negative experiences. Individual resources that facilitated positive experiences included responses reflecting future-oriented optimism (belief that Antarctic employment would be a positive experience for themselves and the expeditioner), positive reframing (e.g. emphasising the opportunities the

Table 9

*Themes Identified Within Partner Pre-Departure Interviews*

Superordinate Theme	Ordinate Theme	Constituent Theme	Frequency of Endorsement (%)
Positive	Work	Opportunity for expeditioner	88
		Time spent together	90
	Relationship	Testing of relationship strength	42
		Planning for expeditioner's absence	30
Negative	Work	Resentment of long hours and work demands	70
		Feeling 'left out' of expeditioner's work	63
	Relationship	Reduced time with expeditioner	82
		Reduced communication quality	67
		Increase in role responsibilities	56
		Testing of relationship strength	30
	Individual	Social isolation	64
		Planning for expeditioner's absence	40

expeditioner's employment would facilitate for their own self-development, as opposed to the high workload and relationship strain), and self-efficacy (belief in personal competency to successfully negotiate period).

Of note however was that whilst partners explicitly stated that their own individual resources influenced the nature of relationship dynamics and that these influenced perceptions of the organisational climate, they argued the bi-directional nature of these relationships such that relationship dynamics and organisational climate influenced their own personal resources.

*Relationship Dynamics:* Partners strongly emphasised that the nature of relationship dynamics (e.g. relationship satisfaction, support, valence of interactions) was an important aspect of their pre-departure experience. Positive relationship dynamics were seen as facilitative of adaptation for both the expeditioner and their loved ones, whereas negative relationship dynamics were seen to negatively impact adaptation processes as they interfered with fully engagement in relationship. Of note is that testing of the relationship strength perceived to occur due to the demands of the pre-departure experience were concurrently viewed as both positive and negative.

*Organisational Climate:* Partners indicated that they did not feel included in the pre-departure process, and as such largely externalised positive experiences in this domain as belonging to the expeditioner. Many partners identified that they would like greater inclusion in the pre-departure experience by participating in briefings, even if by remote access (e.g. webcast). Furthermore, partners identified that this exclusion from the organisational climate resulted in an absence of information dissemination. There was also identification of the degree to which the organisational supported the expeditioner, and the importance of this.



*Information Sharing/Communication:* Partners who were routinely in contact with the organisation and continued to experience quality communication with the expeditioner reported enhanced subjective well-being at this time. However, the majority of partners indicated that in addition to being overlooked by the organisation in regards to information dissemination, expeditioners would also fail to provide information regarding their experiences which contributed to partners feeling as though they did not have the requisite information to support the expeditioner and themselves during this time. As such, it appeared that this led to some psychological withdrawal from the support provided by the expeditioner.

*Social Support:* Partners emphasised that although there was a high need for social support at this time, they did not feel that it was readily available to them. The reasons for this were twofold: firstly, that unless others had experienced Antarctic employment they could not provide adequate understanding and therefore satisfactory support; secondly, that there was not sufficient opportunity to develop relationships with other partners due to geographic dislocation. Due to these factors they felt their trust that experiences would be manageable was undermined.

*Trust:* As demonstrated within the expeditioner model, trust referred to the degree to which partners were confident in their own ability and the ability of the expeditioner to successfully negotiate this and future stages of the Antarctic employment experience. However, it also referred to the trust that the expeditioner would remain faithful to them during the absence period. Partners identified that this trust was based on the quality of social support, information provision, relationship dynamics, organisational climate (with some believing that infidelity was condoned by the organisation), and personal resources. Without this trust partners indicated that they would not be confident in their ability to negotiate future periods of the Antarctic employment experience due to worry and doubt about the

expeditioner's well-being, whether they and the expeditioner would be supported, and whether their relationship would continue.

#### 6.4 Discussion

The current phase of the study aimed to identify and describe experiences of expeditioners and partners during the pre-departure period and how they influence quality of life and well-being during this time to determine whether this represents a factor that needs to be accommodated in future research agendas. A further aim of the current study aim was to identify factors that promote psychological adaptation (as evidenced by high levels of quality of life satisfaction and well-being) in expeditioners and partners during the pre-departure period.

It was hypothesised that: *H1*) Partners would report significantly lower levels of quality of life satisfaction and well-being during the pre-departure period when compared to both single and partnered expeditioners; *H2*) Demographic variables would engender significant within group differences on measures of quality of life satisfaction (as measured by the WHOQOL-BREF) and well-being (as measured by the HSCL-21); and *H3*) Quality of life satisfaction (as measured by the WHOQOL-BREF) and well-being (as measured by the HSCL-21) would be predicted by a combination of individual, organisational, and relationship level factors within each participant category.

##### *Quality of Life and Well-Being at Pre-departure*

The hypothesis predicting that partners would report significantly lower levels of quality of life satisfaction and well-being during the pre-departure period when compared to both single and partnered expeditioners was partially supported. Partners did report significantly lower levels of psychological health satisfaction and environmental satisfaction

as measured by the WHOQOL-BREF compared to both expeditioner categories during the pre-departure period (Table 4). Additionally, partners reported significantly lower levels of well-being (as indicated by significantly higher distress scores) on all HSCL-21 domains (Table 5).

Possible reasons for these differences may be derived from qualitative responses indicating that partners feel a lack of control over their experiences during this period which they largely attribute to work-related factors (as reflected by environmental quality of life) (Table 4). Potentially compounding these differences may be the influence of expeditioner affect during this period. The influences of positive affect (as identified within expeditioners qualitative responses) on well-being and satisfaction has been well-documented (Diener, Emmons, Larsen, & Griffin, 1985; Diener, Sapyta, & Suh, 1998; Kahnemann, Diener, & Schwartz, 1999), and when contrasted with the partner experience may contribute to differences between expeditioner and partner categories at this time.

However, apart from significantly lower levels of physical health satisfaction, partner quality of life scores were consistent with norms reported by Murphy et al. (2000). Furthermore, although reporting significantly higher levels of somatic distress and performance difficulties, partners reported significantly lower levels of general feelings of distress and total distress compared to norms reported by Deane et al. (1992). The findings in regards to expeditioners are consistent with previous research which has identified that expeditioner's function at significantly higher levels than normative populations, supporting a theory of self-selection within this population (Carrere et al., 1991; Palinkas, 1990). If participants are experiencing lower levels of physical health it is possible that the resources required to compensate for this may reduce functioning in other areas such as psychological well-being and relationship quality of life (DeLongis, Folkman, & Lazarus, 1988). In turn,

the potential for such decrements to negatively influence later adaptation may also be influenced as cognitive resources may be depleted.

However, results of the current study further suggest that partners similarly function at higher levels than normative populations although as we are examining a unique population with few similarities with the populations from which the normative samples were derived, these comparisons should be cautiously interpreted. Thus the reasons for differences between Antarctic and other populations stem from different experiences, but may also be explained by an extension of the matching hypothesis of partner selection, termed homogamy or complementarity, whereby people are attracted to others who possess similar personality characteristics (Blackwell, 2004; Klohnen, 1998).

The hypothesis predicting that demographic variables would engender significant within group differences on measures of quality of life satisfaction (as measured by the WHOQOL-BREF) and well-being (as measured by the HSCL-21) was also partially supported (Table 4). Whilst there were no significant differences on measures of well-being as a function of demographic variables, significant age by sex interactions emerged for all participant categories in terms of psychological health satisfaction although the nature of these differed between participant categories (Table 4). Single female expeditioners aged 40-49 years reported significantly higher levels of psychological health satisfaction compared to their male counterparts (Table 4).

In contrast, male partnered expeditioners aged 20-29 years and 50+ years reported significantly higher levels of psychological health satisfaction than their female counterparts. The same pattern of results within the 50+ year age category was demonstrated within the partner sample, although 40-49 year old males reported significantly higher levels of psychological health satisfaction than their female counterparts.

A similar pattern of results was evident for environmental satisfaction within the expeditioner participant categories in that 40-49 year old single females reported significantly higher levels of environmental satisfaction than males, whilst the reverse was true within the 20-29 year age category (Table 4). Within the partnered expeditioner sample 20-29 year old males also reported significantly higher levels of environmental satisfaction than females, as did those aged 50+ years. Most previous research has focused on these issues separately and reporting that female compared to male sojourners and younger compared to older sojourners report greater distress during the pre-departure period (Godwin, 1996; Thompson, Gignac, & McCreary, 2004). For this reason it is difficult to determine whether these results generalise beyond the current Antarctic population.

However, previous research has not reported female sojourners to experience significantly greater levels of functioning than their male counterparts on measures of quality of life satisfaction and well-being. It is likely that the reported age differences within the current sample relate more broadly to developmental differences, in that normative life transitions (e.g., transition to parenthood/post-parenthood, physiological declines associated with increased age, changes in social network, geographic relocation associated with moving house, and career changes for one or more members of the relationship unit) are concurrently occurring during this period (Lavee, McCubbin, & Olson, 1987; Pearlin, 1980; Sherbourne, Meredith, Rogers, & Ware, 1992).

However, documented differences in the experience of the pre-departure period reported by Thompson, Gignac, and McCreary (2004) as a function of experience were not demonstrated within the current sample. Reasons for this can be gleaned from the qualitative data provided by participants. Expeditioners with previous Antarctic experience are often placed in positions of increased responsibility or authority which require additional resources to successfully negotiate. Thus, the potentially protective resources derived from

previous Antarctic experience allow for performance at higher levels of responsibility without associated decrements in quality of life satisfaction and well-being.

Additionally, it is evident that first time expeditioners derive support and assistance from peers with previous experience (including sharing of coping strategies) thereby facilitating adaptive capacities during this period. This possibility is consistent with observations reported by Cravalho (1996) who also documented the mentoring role that experienced expeditioners frequently assume when interacting with first-time expeditioners. Furthermore, there were no quantitative differences in expeditioner pre-departure experience as a function of relationship status (Tables 4 & 5).

#### *Predicting Quality of Life Satisfaction and Well-Being at Pre-Departure*

The hypothesis predicting that quality of life satisfaction and well-being would be predicted by a combination of individual, organisational, and relationship level factors within each participant category was partially supported. The ability of these factors to predict well-being as measured by the HSCL-21 was negligible for all participant categories. In contrast, prediction of quality of life indices was more successful, particularly for partners (Table 6). It was found that personal growth initiative and optimism were conducive to quality of life satisfaction for all participant categories. This finding was further emphasised through qualitative responses which identified the opportunity for growth/experience that Antarctic employment provided.

Additionally, there was considerable overlap between factors that both increased and decreased quality of life satisfaction for both single and partnered expeditioners (Table 6). Avoidance coping strategies of suppression and disengagement served to facilitate expeditioner satisfaction during this period, which is consistent with literature demonstrating that these coping strategies can be effective in situations over which the individual exercises

limited control or influence (Miller & Kaiser, 2001). Trying to achieve balance between competing roles served to decrease expeditioner satisfaction during pre-departure, which contradicts work-family interface literature arguing that balance between domains facilitates functioning (Clark, 2000; Greenhaus, Collins, & Shaw, 2002; Kirchmeyer, 2000).

However, it is arguable that the demands placed on the expeditioner during pre-departure preclude balance between roles and therefore striving to achieve this negatively impacts expeditioner quality of life satisfaction. However, analysis of qualitative data identified that despite acknowledging the necessity for increased organisational demands at this time, many expeditioners feel guilt regarding the degree to which work-related factors impact on family-related activities perhaps explaining the negative impact of external WIF on quality of life satisfaction. However, it is clear that external FIW has a facilitative effect for expeditioner quality of life consistent with theories of positive family-work spill over (Barnett, Marshall, & Pleck, 1992; Bedeian, Burke, & Moffett, 1988). An interesting observation is that the relationship-level factors influenced quality of life satisfaction for both single and partnered expeditioners, suggesting that partnered expeditioners are not uniquely affected by relationship factors during this period (Table 6).

The limited ability of selected variables in predicting partnered expeditioner quality of life satisfaction (Table 6) is difficult to explain, although insights may be gained from qualitative responses indicating that conflicts between their own excitement and negative perceptions of partner well-being influenced the pre-departure experience. Ironically, it appears that partnered expeditioners are overestimating the negative impacts of their impending departure on partners. This misinterpretation may be facilitated by decreased communication quality and increased self-monitoring occurring between parties at this time which was reported by partners.

In contrast to expeditioners for whom the majority of predictor variables were individual factors, partner quality of life satisfaction predictor variables were spread evenly between individual and relationship level factors (Appendix B). In contrast to previous literature examining the partner experience of vocational absences (e.g. Hill, 1949; Black & Stephens, 1989; Shaffer & Harrison, 1985; Shaffer, Harrison, Luk, & Gilley, 2000), role flexibility and relationship commitment negatively impacted quality of life satisfaction during the pre-departure period. It may be that trying to adapt relationship roles to constantly shifting demands during the pre-departure period drains the resources (and therefore quality of life satisfaction) of partners as it would not readily allow for consolidation of roles before renegotiating them.

It may instead be more beneficial to decide what roles will need to be taken in the expeditioner's absence, and negotiate with the expeditioner when this is to be implemented – prior to, or following, departure although this too has the potential to become another challenge to negotiate during this period and may negatively impact those with less well developed problem solving skills (at individual, organisational, and relationship levels). Additionally, high levels of commitment may encourage more dyadic interactions which cannot readily be accommodated by the expeditioner during the pre-departure period and therefore negatively impact on partner quality of life satisfaction. It may also conflict with processes of psychological distancing (such as emotional detachment or withdrawal) which have been documented to occur during the pre-departure period to facilitate more effective coping following the sojourner's departure (Griffiths & Jasper, 2007; Hill, 1949; Logan, 1987; van Breda, 1997, 1999).

Despite fewer organisational-level factors predicting partner quality of life at this time, when discussing their experience of the pre-departure period partners repeatedly emphasised links back to the work domain. Even when discussing constituent themes within



the ordinate categories of individual and relationship, partners externalised issues explaining these themes in terms of the impact of the expeditioner's work demands. This may serve a protective function for the partner as it does not refer to inherent or long-term changes in functioning (particularly in terms of the relationship), and may also partially explain the overall low levels of distress reported by partners despite identifying more negative than positive themes overall.

Related to this, partners felt removed from the experience, and attributed this to not being directly involved in the pre-departure program. This distancing from the experience may help to limit distress, but it is also evident from responses that it can serve as a frustration and factor contributing to perceived emotional distance from the expeditioner during this time. Furthermore, despite the negative themes identified partners acknowledged that they felt the majority of the challenges experienced during the pre-departure period were necessary to ensure the safety and success of the expeditioners' Antarctic employment, again emphasising the link back to the work domain. The differences in factors influencing quality of life between partnered expeditioners and partners may have important implications for functioning during this and subsequent periods of employment.

Within all participant categories explanation of many of the seemingly negative qualitative themes (e.g. high workload and long work hours) were rationalised by the perceived benefit they engendered. This use of positive reframing has been demonstrated to reduce distress in previous studies (Kelly, Tyrka, Price, & Carpenter, 2008), and may help to explain the overall low levels of distress reported by expeditioners and partners alike. It also lends support to the argument that challenging events can be simultaneously perceived as both positive and negative (Calhoun & Tedeschi, 1999), and that the influence of positive interactions can outweigh negative interactions (Bernas & Major, 2000). In this vein, the lack of ability of the quantitative measures employed in predicting partnered expeditioner distress

may be due to the way in which they cognitively organise the experience, and that this differs between single expeditioners and partners.

The models presented to account for expeditioner (Figure 2) and partner (Figure 3) adaptation to the pre-departure period again reinforce the interdependence between individual, organisational, and relationship level factors for both expeditioners and partners alike during this time. However, the ability of the same model to account for these processes (albeit with slightly different emphases) across the different participant samples is an interesting result and contrasts with recent evidence from the expatriate manager literature which identified observable differences in models of adaptation to overseas assignments as experienced by managers and their partners, although the results of that study did not specifically examine the pre-departure component of the experience in isolation (Shaffer & Harrison, 2001).

However, the similarities in processes underlying adaptation between expeditioners and partners at pre-departure may indicate that although there are differences in the nature of experiences as a function of participant category, there remains a high degree of synchrony in schematic representations and therefore interpretations of events at this time. Similarities in such schemas have been demonstrated to facilitate relationship level resilience and adaptation, thereby enhancing functioning in both individual and family domains (McCubbin & McCubbin, 1993; Walsh, 1996) – and in this case, potentially work domains also. In this way there are links between results of the current research with the theory of symbolic interactionism.

Symbolic interactionism (Blumer, 1969) suggests that people actively and continuously interpret stimuli from the environment while interacting with the elements in that environment, and integrate those interpretations through a process of reflection with pre-existing mental models. In this way, people construct the meaning of the things they interact

with and then act towards them in ways consistent with these meanings. In addition, individuals constantly assimilate new experiences, their sense of self, their interpretations and their actions evolve over time, with this process defining how people adapt to new conditions – such as the pre-departure phase of Antarctic employment (Denzin, 1992). The ultimate function of this interpretive process is to facilitate people's ability to adapt to changes in the environment. It is important to accommodate the fact the people's interpretations and actions are influenced by the social contexts they encounter in everyday life (Blumer, 1969).

Furthermore, some aspects of the model proposed by Shaffer and Harrison (2001) were identified in the current models – namely, relationship dynamics, social support. Additionally, the current models share similarities with the Stress-Shield model of resilience (Paton et al., 2008) which also identified that the factors of personal resources (i.e. coping strategies), organisational climate, social support, and trust were predictive of resilience. Considering that the models proposed by Shaffer and Harrison as well as Paton et al. were derived from populations and situations substantially different from those associated with Antarctic employment, this suggests that there may be aspects of adaptation that can be generalised across settings and be considered universal predictors of adaptation.

### *Implications*

Results of the current study suggest that despite the inherent challenges associated with the pre-departure period, expeditioners and partners are not significantly adversely affected and that this may be related to retention of a degree of synchrony between expeditioner and partner schemas at this time. However, by examining the influence of malleable factors in addition to demographic factors, it does identify opportunities for proactive intervention to further maximise functioning during this period.

At present the Australian Antarctic training program includes a comprehensive schedule of lectures designed to prepare expeditioners for experiences during their Antarctic employment. Additionally, the importance of supporting both expeditioners and their families throughout Antarctic employment is recognised by the employment of an expeditioner training and family liaison officer (ETFLO) who largely facilitates these briefings. It is possible that findings of the current study regarding pre-departure experiences and ways to facilitate enhanced quality of life during this period could be integrated into these forums.

Expeditioner education regarding the need for, and effectiveness of, trying to achieve balance between roles (particularly work and non-work roles) may reduce the use of strategies that negatively impact expeditioner quality of life satisfaction during the pre-departure period. Furthermore, such education may assist in normalising experiences thereby enhancing functioning. The effectiveness of normalisation in minimising distress is evidenced by its use in psycho-education (primarily within a cognitive framework) within clinical settings (Chemtob, Tomas, Law, Cremniter, 1997; Kellett, Clarke, & Matthews, 2006; Southwick, Friedman, & Krystal, 2008; van Breda, 1997).

From the partner perspective, greater inclusion in the pre-departure training program may help to overcome issues associated with lack of information as well as facilitate better communication between themselves and the expeditioner during this period. This may include attendance at relevant briefings, and meeting colleagues with whom the expeditioner will be travelling. This is largely accommodated within the existing Australian Antarctic program, although geographic dislocation often impedes partner accessibility. To overcome this it may be possible to utilise technologies such as internet streaming or SKYPE. Additionally, such technologies could facilitate ongoing contact between partners thereby enhancing the sense of available social support.

The demonstrated qualitative and quantitative differences in single expeditioner, partnered expeditioner and partner experience during the pre-departure period may influence future adaptation and adjustment, particularly in light of recent research which has identified that that experiences associated with early stages of a challenging experience (such as prior to departure for Antarctic employment) can affect subsequent adjustment and adaptation at later stages of the experience (Busuttil & Busuttil, 2001; Hill, 1949; Somerfield & McCrae, 2000) and for this reason, future research should incorporate individual, organisation, and relationship dimensions to ensure a comprehensive understanding of the processes is gained. Through this process it may also influence the retention of expeditioners for future Antarctic employment, by providing greater understanding of the concurrent and interdependent experiences of partners and addressing these within proactive intervention programs. It should be noted that the low levels of distress reported by expeditioners and partners alike may assist in this adaptation and adjustment process, potentially enhancing positive growth outcomes.

In summary, results of the present study identified that there are observable and significant differences between the pre-departure experience of expeditioners (both single and partnered) and partners in regards to quality of life satisfaction and well-being, with expeditioners reporting higher levels of functioning in all domains. Furthermore, qualitative response profiles identified clear differences in the cognitive organisation and interpretation of pre-departure experiences between expeditioners and partners. These differences in experience appear to be exacerbated by reduced communication effectiveness occurring between expeditioners and partners, as well as the organisation and partners and contribute to the process of withdrawal and associated distress reported by both partnered expeditioners and partners. The potential of these issues to undermine engagement in either the work domain, family domain, or both and the negative consequences that this may engender

represents an important factor that needs to be acknowledged and accommodated in future research agendas.

Additionally, this study enabled identification of individual, organisational, and relationship level factors that promote psychological adaptation (as evidenced by high levels of quality of life satisfaction and well-being) in expeditioners and partners during the pre-departure period. By focusing on malleable factors that are amenable to change and development separately for single expeditioners, partnered expeditioners, and partners provision of targeted interventions and supports for each participant category can be facilitated and integrated into existing training programs thereby maximising positive adaptation during the pre-departure period.

It is also apparent that the challenges associated with the pre-departure period are likely to have diminished the level of well-being and performance demonstrated by expeditioners during the selection process and that these decrements may carry over to later stages of the Antarctic employment experience (i.e. the absence period) thereby affecting both present and future adaptation and emphasising the importance of examining experiences and adaptation both within and between different phases of Antarctic employment. To determine the extent to which pre-existing patterns of functioning influence later stages of adaptation, the next phase of research investigated the independent and interdependent experiences of the absence period.

CHAPTER SEVEN  
THE ABSENCE PERIOD

### 7.1 Absence

Despite an early emphasis on pathology, contemporary research investigating the experience of Antarctic employment has identified that expeditioners report both positive and negative events throughout their time ‘on the ice’ (e.g. Wood, Hysong, Lugg, & Harm, 2000). Commonly reported negative experiences include psychological distress typified by depressive symptoms, anxiety (Natani & Shurley, 1974; Strange & Youngman, 1971), sleep disturbances (Lugg, 2005) aggressive behaviour, cognitive difficulties (Palinkas, Glogower, Dembert, Hansen, & Smullen, 2004; Palinkas, Johnson, Boster, & Houseal, 1998), and the occurrence of mild fugue states (Bechtel & Berning, 1991; Palinkas, et al., 1995; Strange & Klein, 1973); interpersonal tensions associated with prolonged residence with individuals not of one’s own choosing (Sandal & Palinkas, 2006; Wood et al., 2000); and physiological complaints including gastrointestinal disturbances (Law, 1960; Natani & Shurley, 1974), hormonal disruptions (Palinkas & Suedfeld, 2007) and injuries (Cattermole, 1999; Hassi & Makinen, 2000).

In contrast, commonly reported positive experiences are associated with the sense of community and support developed between expeditioners, appreciation of the unique environmental landscape, and successfully negotiating the inherent challenges of working in Antarctica (Mocellin & Suedfeld, 1991) with many expeditioners reporting healthy psychological adaptation (as evidenced by high levels of emotional adjustment and positive affect) during their time working in Antarctica (Palinkas, Suedfeld, & Stell, 1995; Weiss, Suedfeld, Steel, & Tanaka, 2000; Wood et al., 2000).

This shift in research focus mirrors that demonstrated in the broader psychological literature. Within psychological literature, pathogenic paradigms propose that exposure to psychosocial risk factors (e.g. trauma) is likely to cause distress through undermining the individual’s homeostatic mechanisms (e.g. cognitive



processes, emotional regulation) (Antonovsky, 1987). Furthermore, the individual remains distressed until homeostasis is returned. Thus, within this paradigm, individuals are dichotomously classified as either unhealthy or healthy.

In contrast, salutogenic paradigms acknowledge the possibility of both positive and negative outcomes to result from exposure to risk dependent upon the resources (e.g. coping strategies) available to the individual (Antonovsky), and their current functioning. Furthermore, salutogenic paradigms assume a continuum of well-being along which individuals are constantly moving, such that rather than striving for homeostasis individuals are constantly within dynamic disequilibrium (Antonovsky) thereby avoiding the dichotomous classification of either vulnerable or resilient. However, there are further important differences between pathogenic and salutogenic paradigms which have important implications for the understanding of human experience.

The idea of adaptive capacity and building resilience is related to the salutogenic paradigm. Salutogenesis is concerned with people's capacity to cultivate personal strength through the adversity of a disaster and attain a more informed understanding of the disaster and its impact (Jang, 2005). A main theme of the salutogenic paradigm is sense of coherence, which is essential to resilience, adaptation, and successful coping with challenges (Antonovsky, 1987). The salutogenic paradigm encourages the examination of natural coping resources that exist within the everyday framework of communities, and consideration of how individuals and their communities can make use of those coping resources (Jang, 2005).

This concept does not propose that individuals and communities will not be affected adversely by challenging events. Rather, it contends that adverse consequences can be alleviated through the identification of resources and processes within individuals and communities that can be proactively fostered in a way which increases

preparedness and consequently resilience and adaptation (Jang, 2005). One way in which to do this is to develop a model of preparedness that identifies psychological and social factors within a social context that predict adaptation to challenging circumstances.

As pathogenic outcomes are relatively infrequent, studies investigating these are limited in scope to those affected and who fall within the ‘unhealthy’ category. In contrast, as the salutogenic paradigm considers the spectrum of functioning from unhealthy to healthy, the whole population may become the focus of study as opposed to discrete subgroups (Korotkov, 1998). Furthermore, salutogenic paradigms focus on not only what causes specific positive and negative outcomes (as adopted in pathogenic paradigms), but the processes by which this occurs (Korotkov) thereby enabling development of programs to target more adaptive outcomes.

Researchers have identified that the primary psychological issues underpinning negative experiences involve individual adjustment to the physical and social environment; the lack of physical, psychological, and social novelty for extended periods; and the absence of social support from family and friends throughout the expeditioner’s time ‘on the ice’ (e.g. Mullin, 1960; Sandal, Leon, & Palinkas, 2006; Suedfeld & Steel, 2000; Wood, Lugg, Hysong, & Harm, 1999), although expeditioner distress may be attenuated by ready access to a substitute social support network whom are undergoing the same challenges (i.e. fellow expeditioners) and can identify with these issues (Norris, Paton, & Ayton, 2008).

From this perspective, fellow expeditioners provide a substitute social support network capable of reducing negative experiences attributable to absence from close family, and are consistent with the substitution hypothesis of homesickness proposed by Baumeister and Leary (1995). However, the effects of separation from family and friends, especially intimate partners, have been reported as a major stressor for

expeditioners (Godwin, 1991; Taylor, 1973) and are a common reason for seeking counselling from the station medical officer (Palmai, 1963). Furthermore, prolonged isolation from family and friends may precipitate mood or adjustment disorders in expeditioners (Mullin, 1960; Palinkas, et al., 1995; Palmai, 1963), and potentially exacerbate pre-existing conditions and/or issues that arose from pre-departure experiences (e.g., family stress) that were not identified in the selection process (Strange & Youngman, 1971).

Numerous Antarctic researchers have examined well-being and performance over the course of Antarctic absences. Although primarily limited to expeditioners who experienced an Antarctic winter employment, it has been consistently demonstrated that these measures fluctuate over time as a function of both physiological and psychological mechanisms, and both internal and external events (Brennan, Hall, Verplanken, & Nunn, 2005; Decamps & Rosnet, 2005; Weiss, Feliot-Rippeault, & Gaud, 2007). However, due to the limited demarcation between work and non-work roles at this time, a majority of the precipitants are work-related (Cravalho, 1996).

To gain a greater appreciation of positive and negative events experienced over the course of a winter, Wood et al. (2000) asked 104 expeditioners to provide qualitative responses to questions assessing these factors twice each week for the duration of their time in Antarctica (9-12 months). Results identified that although a greater number of negative events were identified, they were experienced relatively infrequently. In contrast, comparatively fewer positive events were identified by expeditioners yet were reported to occur more often. Results were reported in terms of frequency of each identified category rather than proportion of overall responses which comprised each category. Intergroup differences in the experience of positive and negative events were also identified, with these being attributed to differences in group dynamics between stations and across years. Temporal patterns in the experience of

positive and negative events were also evident, however due to incomplete data sets these temporal variations could not be statistically evaluated.

Knowledge of commonly experienced positive and negative events associated with Antarctic absences enables integration of this information into training programs, thereby facilitating preparation for and normalising of such events. In doing so, it promotes a sense of predictability and control over the situation – factors which have been associated with positive coping and adjustment strategies (e.g. Brown, Mulhern, & Joseph, 2002; Carver et al., 2000; Peacock & Wong, 1996). These factors have also been implicated in resilience and growth outcomes (Schieman & Plickert, 2008).

Research investigating the partner experience of vocational absences in other populations (including the military, off-shore oil rigs, and expatriate managers) has consistently demonstrated that partners report significantly higher levels of distress compared to the absent individual during the absence period (Beckman, et al., 1979; Isay, 1968; Morrice, et al., 1985; Norris, et al., 2008; Nice, 1983; Pearlman, 1970; Snyder, 1978). To date the partner experience of Antarctic employment (and its inter-dependent effects) has been largely overlooked. However, the limited research that does exist testifies that there are distinct differences between the experiences reported by expeditioners and partners (Norris, Paton, & Ayton, 2008). Considering that most intimate relationships are based on shared experiences and understanding (Wenzel & Harvey, 2001), it is possible that the apparent absence of these factors during Antarctic absences may negatively influence the reunion and reintegration process (Norris et al.).

In support of this assumption, Taylor (1987) identified that divergent perceptions of the absence experience were reported by the absent individual and partners who remained at home, relating to issues including individual coping resources, availability of social support, and relationship strain. Furthermore, differences in the temporal patterns of experiences are also evident between the absent individual and the

partner who remains behind such that distress is highest for partners earlier and sustained longer compared to the absent individual.

Considering the impact that prolonged separation from intimate partners has on expeditioners, it is surprising that the concurrent experience of partners has been overlooked. Additionally, whilst not exposed to the same environmental stressors, the absence of the expeditioner often engenders additional roles/responsibilities to be undertaken by partners. Research investigating the concurrent experience of partners in other populations whom undergo vocational separations has demonstrated that these absences are particularly challenging, with significant impacts on psychological health. Symptoms of anxiety, depression (Beckman, Marsella, & Finney, 1979; Nice, 1983; Morrice, Clark, & McCann, 1985; Morrice & Taylor, 1978), irritability (Snyder, 1978), sleep disturbances (Isay, 1968), and physical health problems (Snyder) have all been documented in these populations at significantly higher levels than those reported by the absent individual as well as controls.

Knowledge of the concurrent experiences of single expeditioners, partnered expeditioners, and partners is imperative in developing a comprehensive understanding of the Antarctic separation experience. Furthermore, as the dynamics of reunion and reintegration of family members is predictable from the functioning patterns demonstrated during the separation experience (Busuttil & Busuttil, 2001; Hill, 1949; Somerfield & McCrae, 2000), it is arguable that an understanding of Antarctic absences will provide insights into the reunion and reintegration experience for single expeditioners, partnered expeditioners, and partners alike. Thus this phase of the study aimed to compare the psychological health of these participant categories throughout Antarctic absence to provide insight into factors that may facilitate positive adaptation at this time.

In line with previous research, it was hypothesised that:

*H1.* Partners will report significantly higher levels of psychological distress compared to single and partnered expeditioners at all stages of Antarctic absence. However, due to the similarity in experiences between single and partnered expeditioners, there will not be significant differences in psychological distress between these participant categories.

*H2.* All participant categories will demonstrate fluctuations in well-being over the course of the Antarctic absence period.

*H3.* The themes identified within qualitative responses will differ as a function of participant category such that:

*H3a.* Both single expeditioners and partnered expeditioners will report more work-related themes than partners.

*H3b.* Partnered expeditioners will report more relationship-related themes than single expeditioners.

## 7.2 Method

### *Participants*

The same expeditioners and partners participated in all phases of the research project. Participant characteristics are detailed on pages 58 and 88 of the thesis.

### *Materials*

*Quality of Life Satisfaction:* Quality of life satisfaction was assessed using two global items from the WHOQOL-BREF (WHOQOL Group, 1998).

*Health and well-being:* The Hopkins Symptom Checklist – 21 (HSCL-21; Green, Walkey, McCormick, & Taylor, 1988) was used to ascertain the current level of health and well-being experienced by participants during the pre-departure period.

In addition to administration of quantitative measures, two qualitative items provided participants the opportunity to discuss issues not otherwise assessed, thereby allowing new variables regarding experiences of Antarctic absences to emerge. These

items assessed positive experiences “What has been the most positive experience to date?” and negative experiences “What has been the most negative experience to date?”. As previously argued by Wood et al. (2000) this approach maximises the quality and quantity of data which would otherwise be compromised if using a single observer to record group experiences, whilst the structured approach to data collection avoids difficulties associated with compliance when using unstructured diary entries.

### *Procedure*

On the last day of each month during the absence period all participants received an email reminding them of the purposes of the study which ensured consistency in the timing of data collection both within and between cohorts. The research questionnaire comprising the HSCL-21, quality of life measure, and qualitative items, was included as an attachment to which participants could either respond via return email or fax. In situations where partners did not have access to email they received a hard-copy of the protocol in the mail, along with a reply-paid envelope. This method was used to circumvent expeditioner reluctance to use web-based questionnaires following difficulties experienced when participating in a previous research study. Individual response profiles were compared monthly throughout the study to ensure that participants were not reusing answers from the previous month.

## 7.3 Results

### *Analysis Strategies*

Preliminary analyses investigated between and within group differences on the quality of life and well-being measures.

### *Quality of Life Satisfaction*

In order to test the first hypothesis relating to whether all participant categories would demonstrate fluctuations in quality of life satisfaction over the course of the

absence period, means and standard deviations for the two quality of life items were calculated for each participant category (Table 10). As there were no significant differences ( $p > .05$  for all comparisons) in these measures over the absence period, only the overall means are reported.

Table 10

*Comparing Mean Quality of Life and Health Satisfaction During the Absence Period for Single Expeditioners, Partnered Expeditioners, and Partners*

Variable	Single		Partnered		Partners	
	Expeditioners		Expeditioners			
	M	SD	M	SD	M	SD
Quality of Life	4.50	.50	4.00	.50	4.25	.50
Health Satisfaction	4.50	.50	4.00	.50	4.50	.50

Mean quality of life and health satisfaction scores reported by all participant categories indicated high levels of satisfaction throughout the absence period. There were no significant differences ( $p > .05$  for all comparisons) between participant categories on either of the quality of life items throughout the absence period. Similarly, there were no significant within group differences on these measures as a function of demographic variables or absence length.

#### *Well-Being*

In order to test the second component of the first hypothesis, that all participant categories would demonstrate fluctuations in well-being over the course of the Antarctic absence period, a series of repeated measures ANOVAs were conducted. These analyses were also used to test whether partners would report significantly higher levels of distress compared to single and partnered expeditioners at all stages of the Antarctic



absence. As analyses identified that there were no significant differences between mean Somatic Distress (SD), Performance Difficulties (PD), and General Feelings of Distress (GFD) scores across the absence period for any participant category data was collapsed and only HSCL-21 total scores are reported.

#### *Absences of Three – Six Months*

##### *Between Group Differences*

Estimated marginal means for HSCL-21 scores across the Antarctic absence for each participant category experiencing an absence of three-six months are presented in Figure 2. To control for significant differences between HSCL-21 scores across participant categories at baseline, pre-departure scores were used as a covariate in the subsequent analyses. A 3[Group: single expeditioner, partnered expeditioner, partner] x 6(Time: month 1, month 2, month 3, month 4, month 5, month 6) Repeated Measures ANOVA with a Greenhouse-Geisser correction determined a significant group x time interaction for participants experiencing an absence of three-six months,  $F(9, 1016)=4.61, p<.001$ , indicating that well-being depends on both participant category and the time of assessment during Antarctic absence. Analysis of main effects identified a significant effect for participant category,  $F(2, 226)=108.24, p<.001(\eta^2=.49)$  such that partners consistently reported higher levels of distress irrespective of time throughout the absence period. Similarly, there was a main effect for time irrespective of group membership,  $F(4, 1016)=2.66, p<.05(\eta^2=.03)$ .

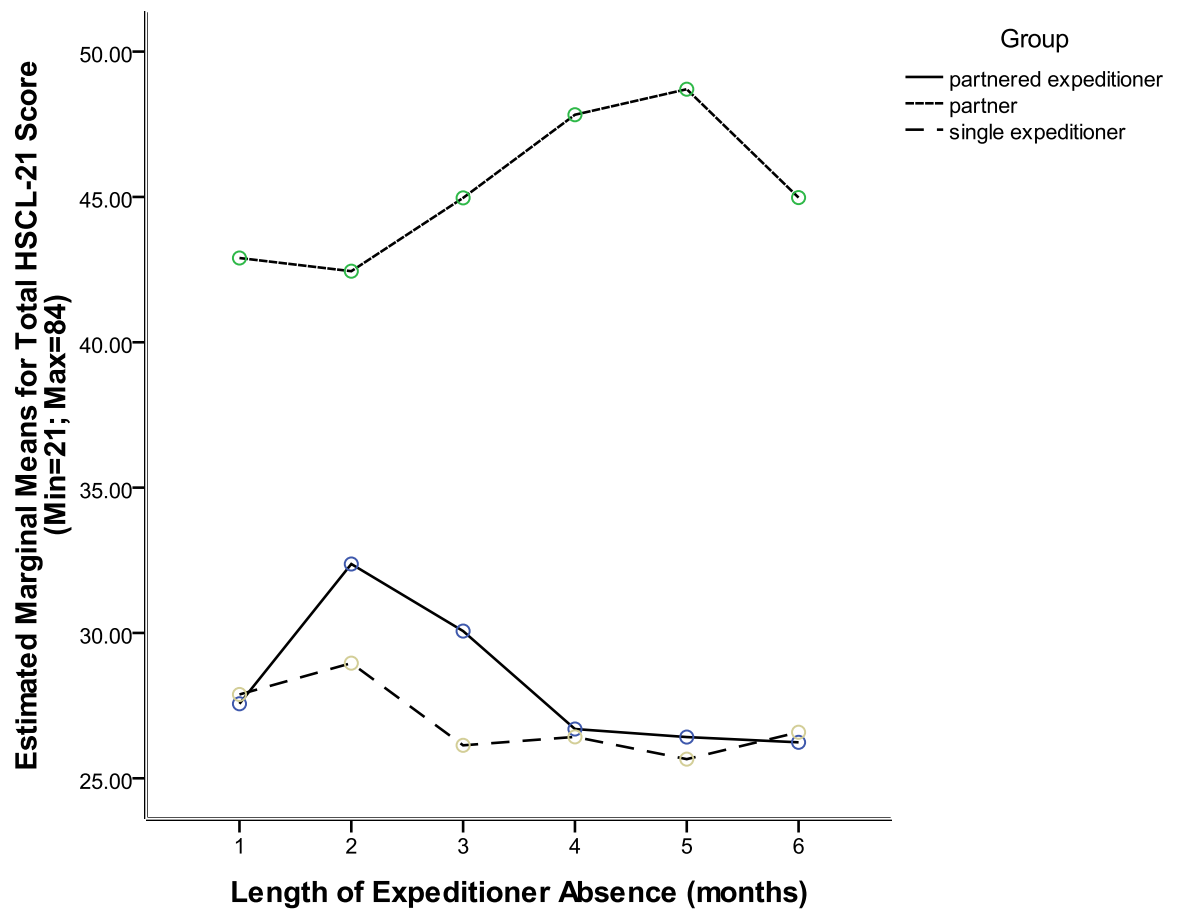


Figure 4. Mean HSCL-21 scores across the absence period for single expeditioners, partnered expeditioners, and partners experiencing an absence of three-six months

As demonstrated in Figure 4, for single and partnered expeditioners experiencing an absence of three-six months, the highest level of distress was experienced during month two. In contrast, the highest level of distress experienced by partners was during month 5. Total distress scores reported by single and partnered expeditioners initially increased at month two, decreased, and then plateaued from month four through six and were lower at absence end than initial arrival in Antarctica. In contrast, partner total distress scores initially decreased at month two before increasing until month five, before decreasing at month 6.

#### *Within Group Differences*

### Single Expeditioners

A 2[Experience: yes, no] x 6 (Time: month 1, month 2, month 3, month 4, month 5, month 6) repeated measures ANOVA identified a significant main effect of experience within the single expeditioner category such that non-experienced expeditioners consistently reported lower distress scores throughout the absence period,  $F(1, 44)=8.14, p<.01$  ( $\eta^2=.16$ ).

There were no differences as a function of demographic variables recorded for partnered expeditioners or partners.

### *Absences of Seven – 10 Months*

#### *Between Group Differences*

Estimated marginal means for HSCL-21 scores across the Antarctic absence for each participant category experiencing an absence of seven-10 months are presented in Figure 3. To control for significant differences between HSCL-21 scores as a function of participant category at baseline, pre-departure scores were used as a covariate in the subsequent analyses. A 3[Group: single expeditioner, partnered expeditioner, partner] x 10(Time: month 1, month 2, month 3, month 4, month 5, month 6, month 7, month 8, month 9, month 10) Repeated Measures ANOVA determined a significant group x time interaction for participants experiencing an absence of seven-10 months,  $F(18, 297)=1.74, p<.05$  ( $\eta^2=.10$ ), indicating that well-being depends on both participant category and the time of assessment during Antarctic absence. Analysis of main effects identified a significant effect for participant category,  $F(2, 33)=49.45, p<.001$  ( $\eta^2=.75$ ) such that partners consistently reported higher levels of distress throughout the absence period.

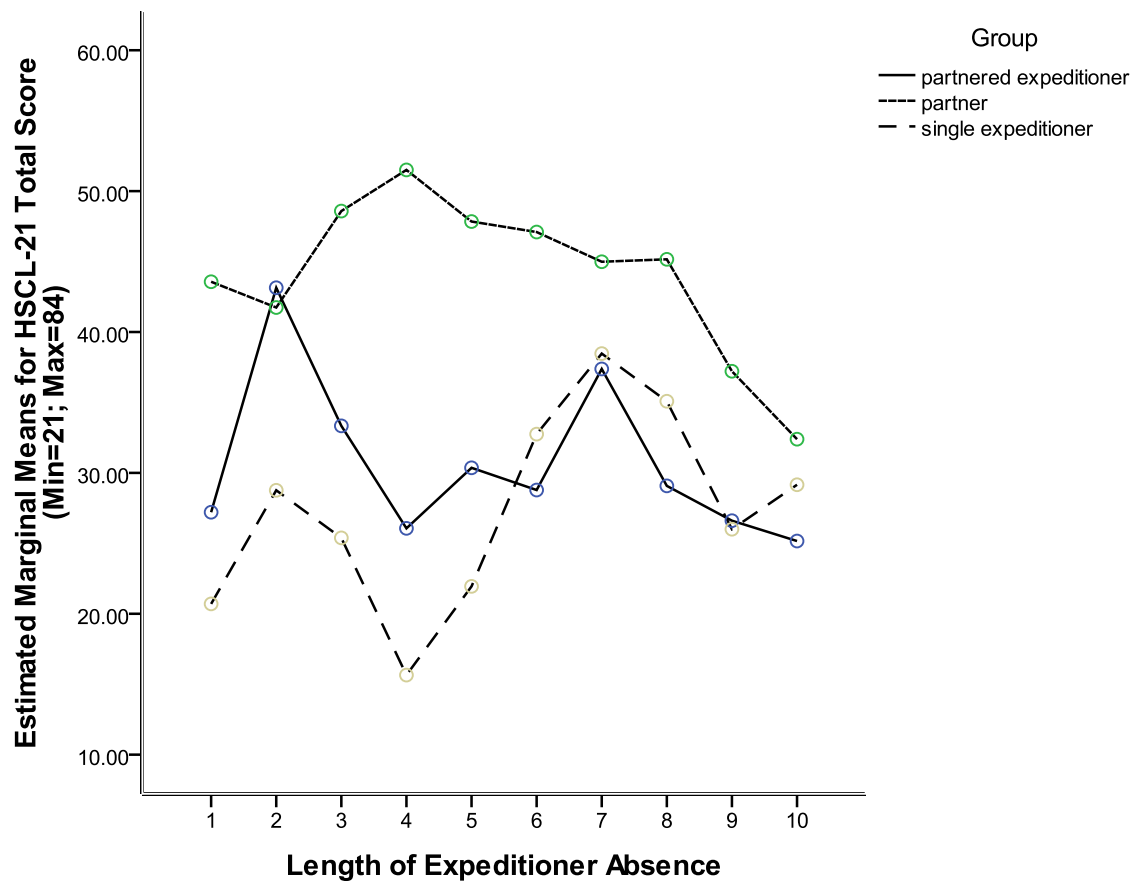


Figure 5. Mean HSCL-21 scores across the absence period for single expeditioners, partnered expeditioners, and partners experiencing an absence of seven-10 months

As demonstrated in Figure 5, at month four partners reported the highest level of distress during their absence experience whilst single expeditioners and partnered expeditioners reported their lowest. Single expeditioner distress scores initially rose at month two, declined at month four, then increased again until month seven before again declining. A similar pattern was demonstrated by partnered expeditioners. In contrast, partner distress scores initially decreased at month two, before increasing until month four and then declining for the remainder of the absence period and were lower at absence end than after the first month of the expeditioner's absence.

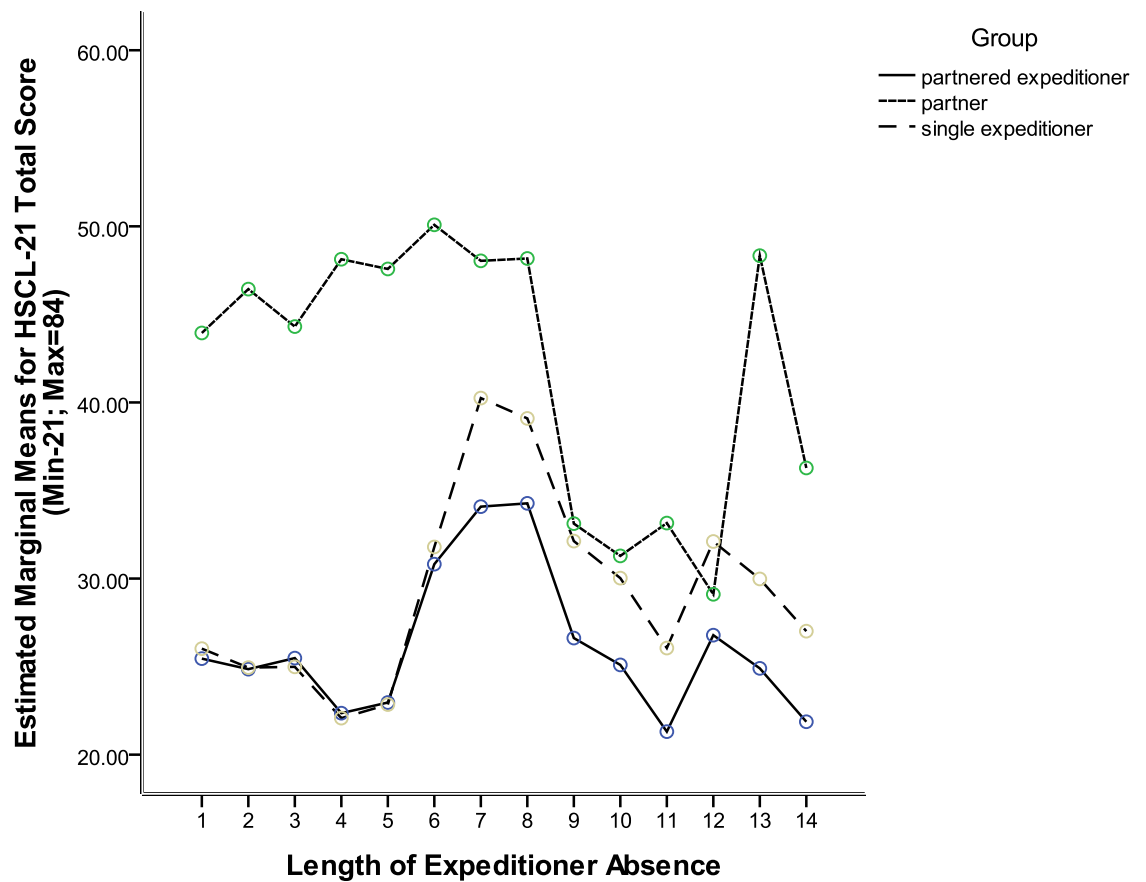
#### *Within Group Differences*

There were no significant differences in experience as a function of demographic variables for any participant category.

#### *Absences of 11-14 Months*

##### *Between Group Differences*

Estimated marginal means for HSCL-21 scores across the Antarctic absence for each participant category experiencing an absence of 11-14 months are presented in Figure 4. To control for significant differences between HSCL-21 scores at baseline, pre-departure scores were used as a covariate in the subsequent analyses. A 3[Group: single expeditioner, partnered expeditioner, partner] x 14(Time: month 1, month 2, month 3, month 4, month 5, month 6, month 7, month 8, month 9, month 10, month 11, month 12, month 13, month 14) Repeated Measures ANOVA with a Greenhouse-Geisser correction determined a significant group x time interaction for participants experiencing an absence of 11-14 months,  $F(10, 204)=6.22, p<.001$  ( $\eta^2=.23$ ), indicating that well-being depends on both participant category and the time of assessment during Antarctic absence. Analysis of main effects identified a significant effect for participant category,  $F(2, 41)=50.35, p<.001$  ( $\eta^2=.71$ ). Similarly, there was a main effect for time irrespective of group membership,  $F(5, 204)=5.11, p<.001$  ( $\eta^2=.11$ ).



*Figure 6.* Mean HSC-21 scores across the absence period for single expeditioners, partnered expeditioners, and partners experiencing an absence of 11-14 months

As demonstrated in Figure 6, from months one through five single and partnered expeditioners reported lower distress scores than partners, however from months nine through 12 such differences were not evident. At month four, single and partnered expeditioner scores declined whilst partner scores increased. A similar pattern is evident at month 11. Single expeditioner distress scores declined from months one through five before increasing through to month seven. Scores then declined again from months eight through 11, increased at month 12, and then declined again. A similar pattern of results was demonstrated for partnered expeditioners. In contrast, partner scores slowly

rose from months one through seven, declined from months eight through 12. There was a sharp increase in distress scores at month 13 however this had declined by month 14.

#### *Within Group Differences*

There were no significant differences as a function of demographic variables for any participant category.

#### *Absences of 15-18 Months*

#### *Between Group Differences*

Estimated marginal means for HSCL-21 scores across the Antarctic absence for each participant category experiencing an absence of 15-18 months are presented in Figure 5. To control for significant differences between HSCL-21 scores at baseline, pre-departure scores were used as a covariate in the subsequent analyses. A 3[Group: single expeditioner, partnered expeditioner, partner] x 18(Time: month 1, month 2, month 3, month 4, month 5, month 6, month 7, month 8, month 9, month 10, month 11, month 12, month 13, month 14, month 15, month 16, month 17, month 18) Repeated Measures ANOVA with a Greenhouse-Geisser correction determined a significant group x time interaction for participants experiencing an absence of 15-18 months,  $F(12, 220)=5.26, p<.001$  ( $\eta^2=.22$ ), indicating that well-being depends on both participant category and the time of assessment during Antarctic absence. Analysis of main effects identified a significant effect for participant category,  $F(2, 37)=46.98, p<.001$  ( $\eta^2=.72$ ). Similarly, there was a trend towards a main effect for time irrespective of group membership,  $F(6, 220)=2.09, p<.06$  ( $\eta^2=.06$ ).

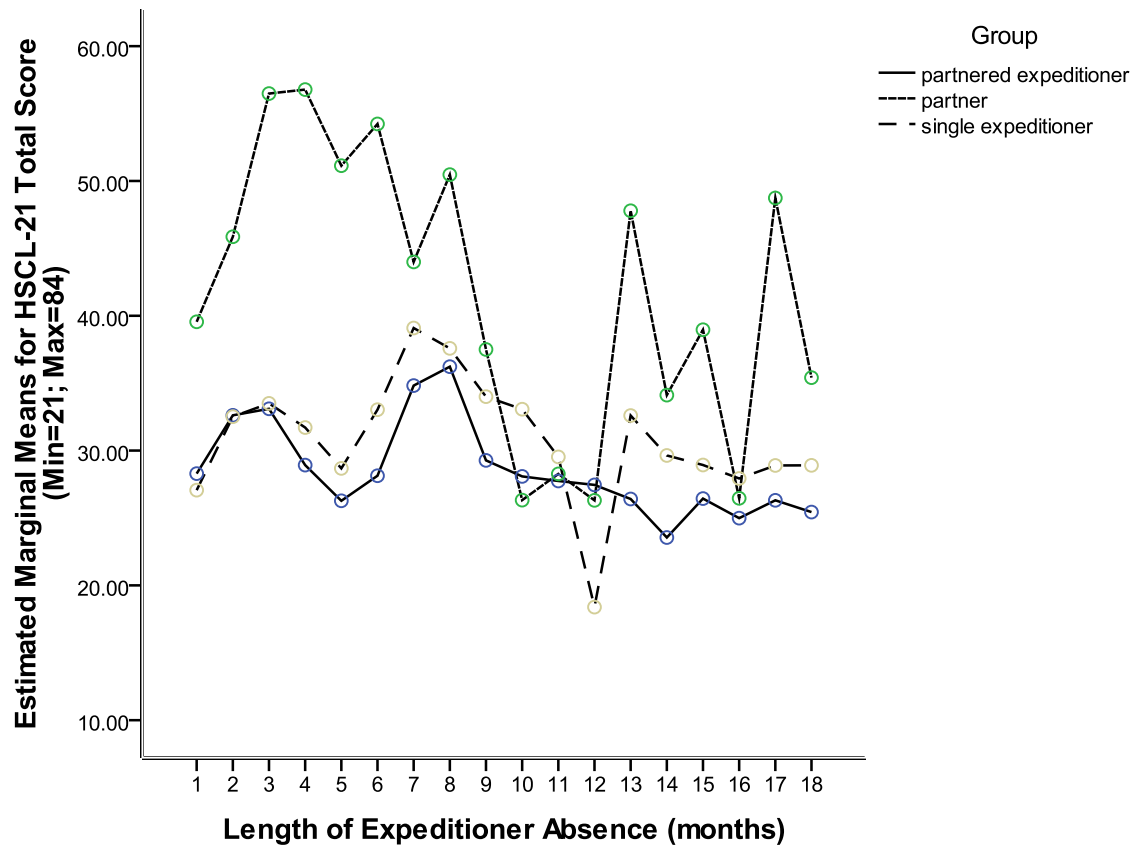


Figure 7. Mean HSCCL-21 scores across the absence period for single expeditioners, partnered expeditioners, and partners experiencing an absence of 15-18 months

As demonstrated in Figure 7, at month seven single and partnered expeditioner total distress scores increased whilst partner distress scores decreased. The pattern of distress scores demonstrated within the single expeditioner category was similar to that demonstrated within the partnered expeditioner category with a series of increasing distress scores interspersed with decreases until month 13 when scores appeared to plateau. In contrast, greater variation was demonstrated within the partner distress profile across the absence period. Partner distress scores were consistently higher than expeditioners from months one through eight. They were on par with expeditioners from months nine through 12, however rose again sharply at month 13, declined, and



rose again at month 17. Within all participant categories distress scores at the end of the absence period were similar to those recorded at the beginning of the expeditioners' Antarctic absence.

### *Within Group Differences*

#### Single Expeditioners

A 2[Sex: male, female] x 18 (Time: month 1, month 2, month 3, month 4, month 5, month 6, month 7, month 8, month 9, month 10, month 11, month 12, month 13, month 14, month 15, month 16, month 17, month 18) repeated measures ANOVA identified a main effect for sex,  $F(1, 14)=5.82$ ,  $p<.05$  ( $\eta^2=.29$ ), with single female expeditioners consistently reporting significantly lower levels of distress than single male expeditioners.

#### Partnered Expeditioners

A 2[Experience: yes, no] x Time (Time: month 1, month 2, month 3, month 4, month 5, month 6, month 7, month 8, month 9, month 10, month 11, month 12, month 13, month 14, month 15, month 16, month 17, month 18) repeated measures ANOVA identified a significant main effect of experience such that non-experienced partnered expeditioners reported significantly lower levels of distress than experienced partnered expeditioners,  $F(1, 4)=35.68$ ,  $p<.01$  ( $\eta^2=.90$ ).

#### Partners

There were no significant differences ( $p>.05$  for all comparisons) in distress as a function of demographic variables within the partner category.

Table 11

*Themes Identified Within Single Expeditioner Qualitative Response Profiles During the Absence Period*

Superordinate Theme	Ordinate Theme	Constituent Theme	Frequency of Endorsement (%)
Positive	Individual	Recreational activities	1.18
		Adventure	6.40
		Skill development	6.52
		Goal attainment	10.68
		Field trips	18.61
	Organisational	Work activities	6.63
		Professional recognition	8.01
		Team dynamics	11.37
	Relationship	Communication with family/friends	2.03
		Social support	3.98
		Celebrations	9.85
	Other	No response/nil	1.00
		Environment	13.74
Negative	Individual	Confinement	2.61
		Physiological complaints	3.77
		Frustration at circumstances	4.49
	Organisational	Work underload	2.14
		Work overload	6.30
		Insufficient work resources	6.94
		Resupply	8.69
		Restrictions	9.08
		Unfair treatment	9.18
		Serious injury/death of team member	15.28

Table 11 (continued)

*Themes Identified Within Single Expeditioner Qualitative Response Profiles During the Absence Period*

Superordinate Theme	Ordinate Theme	Constituent Theme	Frequency of Endorsement (%)
	Relationship	Missing milestones	1.60
		Separation from family/friends	4.08
		Interpersonal tensions	11.89
	Other	No response/nil	13.95

### *Expeditioner Qualitative Response Profiles*

The most positive and negative experiences identified by single expeditioners and the absolute frequency with which they were reported are detailed in Table 11. An interesting observation is that whilst some negative themes are in direct opposition to identified positive themes (e.g. interpersonal tensions vs. team dynamics; confinement vs. field trips), most positive themes are independent from negative themes. Furthermore, most themes (both positive and negative) relate to the individual and work, with minimal reference to family and friends remaining in Australia. Single expeditioners endorsed a similar number of both positive (13) and negative (14) themes.

By examining the 95% confidence intervals of each theme and the proportion of overall responses it constitutes it is possible to determine whether there are significant differences in the frequency of reporting of qualitative themes. If the confidence intervals do not overlap, this indicates the presence of a significant difference. This method also allows for repeated comparisons of correlated categorical non-parametric data. Using this method it was determined that of the positive themes field trips (95% CI: 16.11% - 21.27%) were reported significantly more often than environment (95% CI: 11.37% – 16.83%), and therefore all other positive themes. Within the negative themes the serious injury/death of a team member (95% CI: 14.75% - 18.20%) was reported significantly more often than interpersonal tensions (95% CI: 11.18% - 15.53%), and therefore all other negative themes excepting when no response/nil was provided.

Table 12

*Themes Identified Within Partnered Expeditioner Qualitative Response Profiles During the Absence Period*

Superordinate Theme	Ordinate Theme	Constituent Theme	Frequency of Endorsement (%)
Positive	Individual	Recreational activities	1.18
		Goal attainment	5.13
		Skill development	6.52
		Adventure	9.40
		Field trips	22.22
	Organisational	Professional recognition	8.01
		Work activities	9.19
		Team dynamics	11.00
	Relationship	Communication with partner	2.35
		Celebrations	3.85
		Social support	5.98
	Other	No response/nil	.43
		Environment	14.74
Negative	Individual	Confinement	.53
		Physiological complaints	2.56
		Frustration at circumstances	4.49
	Organisational	Work underload	2.14
		Unfair treatment	6.02
		Work overload	6.30
		Resupply	8.69
		Insufficient work resources	8.44
		Restrictions	9.08
		Serious injury/death of team member	19.66

Table 12 (continued)

*Themes Identified Within Partnered Expeditioner Qualitative Response Profiles During the Absence Period*

Superordinate Theme	Ordinate Theme	Constituent Theme	Frequency of Endorsement (%)
	Relationship	Missing milestones	1.60
		Separation from partner/family/friends	4.00
		Concern for partner	5.08
		Interpersonal tensions	13.35
	Other	No response/nil	10.04

The most positive and negative experiences identified by partnered expeditioners and the absolute frequency with which they were reported are detailed in Table 12 with considerable overlap demonstrated with themes reported by single expeditioners. As demonstrated within the single expeditioner participant category, some negative themes are in direct opposition to identified positive themes (e.g. interpersonal tensions vs. team dynamics; confinement vs. field trips), although most positive themes (e.g. goal attainment) are independent from negative themes. Furthermore, most themes (both positive and negative) relate to the individual and work, with minimal reference to family and friends remaining in Australia. Overall, partnered expeditioners reported slightly more negative than positive themes during the absence period (15 themes and 13 themes respectively).

Comparison of 95 % confidence intervals determined that of the positive themes field trips (95% CI: 19.56% - 24.89%) were reported significantly more often than environment (95% CI: 12.47% – 17.01%), and therefore all other positive themes. Within the negative themes the serious injury/death of a team member (95% CI: 17.77% - 22.20%) was reported significantly more often than interpersonal tensions (95% CI: 11.18% - 15.53%), and therefore all other negative themes excepting when no response/nil was provided. Concern for partner, although reported relatively infrequently, was a source of distress for partnered expeditioners whilst working in Antarctica. Primarily these concerns were precipitated by an event over which the expeditioner could not exert influence, which seemed to compound distress at this time.

In order to develop a model articulating the mechanisms underpinning adaptation during the absence period interview transcripts were further analysed to determine links between the ordinate themes of work, relationship, and individual. The resultant model of factors influencing pre-departure adaptation for single and partnered expeditioners is presented in Figure 8.

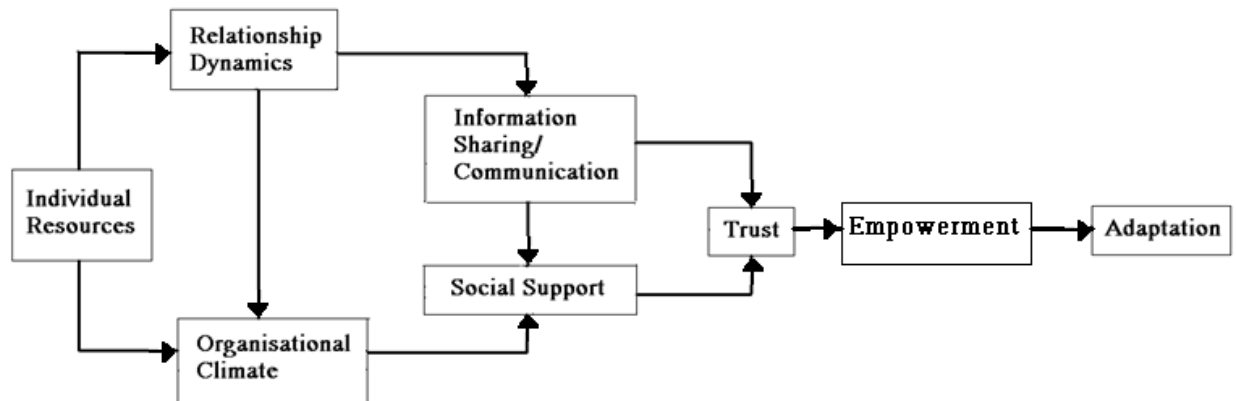


Figure 8. Model depicting factors that influence single and partnered expeditioner adaptation during the absence period.

*Individual Resources:* During the absence period, individual resources identified by expeditioners as facilitative of either positive or negative adaptation referred to both physiological and psychological resources. Physiological complaints (e.g. minor injuries/ailments including frost-nip, weight gain, declines in fitness, sleep disturbances) were seen to negatively impact on the individual's resources, which in turn negatively impacted on their participation in both relationship and work domains. The psychological strategies demonstrated during pre-departure (optimism, positive reframing, and self-efficacy) were seen to positive enhance adaptive capacity through enabling higher functioning in both relationship and work domains.

*Relationship Dynamics:* Both single and partnered expeditioners emphasised that the nature of interpersonal interactions was an important component of their adaptation during the absence period. Specifically, the quality and valence of communication with partners, family, and friends influenced the perceived availability and satisfaction with social support provision at this time. The ability to share in positive celebrations and was facilitative of positive adaptation contrasted sharply with



missing milestones (e.g. birthdays, anniversaries) at home and therefore were seen as negatively impacting adaptation, particularly for partnered expeditioners. One point of divergence between single and partnered expeditioners appeared to be the degree of worry regarding the well-being of partners who remained at home. Responses provided by partnered expeditioners indicated that they felt their partner was likely to experience difficulties, and that led to frustration or guilt that they could not offer direct support in these circumstances.

*Organisational Climate:* Due to the high salience of work related factors during the absence period in that there is little demarcation between work and non-work roles, there was a large amount of discussion regarding the positive and negative impacts that the organisational climate can have on expeditioner adaptation at this time. Specifically, if expeditioners felt that their expertise was being recognised, rewarded, and further developed this was associated with positive adaptation. In contrast, if expeditioners felt that their workload was inappropriate (either too much or too little), that they had insufficient resources to complete their work, that other staff were being preferentially treated, or that the organisation had taken an overly restrictive approach to leisure activities they argued that this negatively impacted adaptation. Of particular note, resupply was identified to be a particularly challenging period as existing expeditioners felt that incoming staff often were disrespectful towards their needs at this time. In particular, existing expeditioners felt that incoming staff should not be first in line to consume fresh produce, should assist more in daily chores, and not be so eager to ‘take over’ the station.

*Information Sharing/Communication:* As identified within the relationship dynamics category, communication with home was seen as both a positive and negative aspect of information sharing at this time, and impacted on adaptation. Positive communication was seen as reassurance that there was continued support for their

employment choice, and that their loved ones were successfully negotiating this period. However, it also reinforced the separation from them, and if it was strained often left the expeditioner distressed for some time after the contact ceased. Many expeditioners, both single and partnered, stated that negative communication from home negatively impacted on the individual's ability to fully engage in their work and often led to frustration and intensified interpersonal tensions that occurred from spending long periods of isolation with people not of the individual's choosing. Interpersonal tensions were also seen to negatively impact the availability of collegial social support at this time.

*Social Support:* Single and partnered expeditioners emphasised the importance of collegial social support in facilitating positive adaptation throughout the absence period. In particular, following the death of one expeditioner and serious injury of another three years later expeditioners identified that collegial social support facilitated their ability to adapt to these unique and tragic circumstances. They also identified that the organisations approach to managing these situations allowed for them to access this social support without relying on external, formalised interventions which they felt were inappropriate at that time and would have largely refused. As a result, although partnered expeditioners continued to receive support from partners, they often placed equal or greater emphasis upon that provided by peers as they felt a common understanding provided a greater ability to empathise with their needs.

*Trust:* As demonstrated within the pre-departure period, trust referred to the degree to which expeditioners were confident in their own ability, their colleagues' ability, and the ability of their loved ones to successfully negotiate this and future stages of the Antarctic employment experience. Expeditioners identified that this trust was based on the quality of social support, information provision, relationship dynamics, organisational climate, and personal resources. Without this trust expeditioners

indicated that they would not be confident in their ability to negotiate future periods of the Antarctic employment experience due to worry and doubt about whether they would be supported or safe.

*Empowerment:* As a result of this trust, expeditioners often experienced a degree of empowerment associated with the development of new skills and experiences that otherwise may not have been available to them. In particular, the uniqueness of their experience and ability to negotiate a period of time in one of the most extreme and unusual environments on Earth further facilitated this sense of empowerment. It was this sense of empowerment that appeared to most strongly facilitate adaptive outcomes during the absence period.

#### *Partner Qualitative Response Profiles*

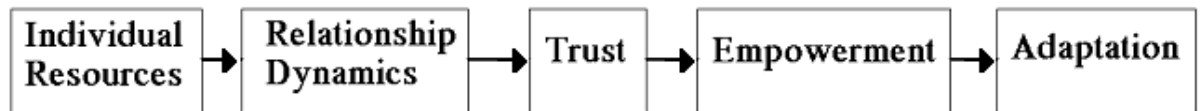
The most positive and negative experiences identified by partners and the absolute frequency with which they were reported are detailed in Table 13. As demonstrated with the expeditioner samples, there are some positive and negative themes in direct opposition to one another (e.g. social support vs. lack of support; communication with expeditioner vs. lack of consultation) however most positive themes appear to be independent of negative themes. Furthermore, most themes relate to the individual and the relationship unit. Within the positive themes, increased self-focus (95% CI: 12.67% - 17.24%) was reported significantly more than expeditioner development (95% CI: 6.85% - 10.46%), and therefore also anticipation of return, and social support. There were no significant differences in the frequency of negative themes reported by partners, however there were more negative than positive themes identified (10 themes and 8 themes respectively).

Table 13

*Themes Identified Within Partner Qualitative Response Profiles During the Absence Period*

Superordinate Theme	Ordinate Theme	Constituent Theme	Frequency of Endorsement (%)
Positive	Individual Factors	Increased self-focus	14.97
		Self-development	21.69
		Empowerment	23.50
	Organisational Factors	Nil	0.00
	Relationship Factors	Social support	5.34
		Anticipation of expeditioner return	6.62
		Expeditioner development	8.65
		Communication with expeditioner	19.23
Negative	Individual Factors	Loneliness	3.85
		Domestic frustrations	12.50
		Overload	20.41
	Organisational Factors	Nil	0.00
	Relationship Factors	Lack of support	7.37
		Inability to share milestones	5.98
		Lack of consultation	8.23
		Concern for expeditioner health/safety	10.04
		Relationship strain	13.46
		Absence of expeditioner	18.16

Again, partner interview transcripts were further analysed to determine links between the ordinate themes of work, relationship, and individual. The resultant model of factors influencing adaptation throughout the absence period for partners is presented in Figure 9.



*Figure 9.* Model depicting factors that influence partner adaptation during the absence period.

*Individual Resources:* Individual resources identified by partners as facilitative of positive adaptation during the absence period included independence, autonomy, and pursuit of personal goals. When able to harness these resources partners felt less influenced by perceived negative relationship dynamics, and more able to influence positive relationship interactions. In contrast, when partners felt that they did not have sufficient psychological or physiological resources (often associated with routine household maintenance and daily activities) that they often blamed the expeditioner for this and as a result experienced more negative relationship dynamics.

*Relationship Dynamics:* During the absence period, relationship dynamics primarily referred to interactions with the expeditioner and the degree of social support derived from these. As such, communication and social support were collapsed under relationship dynamics. Partners noted that communication quality and valence vacillated over the course of the absence period, and that the nature of this communication greatly impacted on their own ability to have trust in the fact that their relationship would benefit from experiencing Antarctic employment. Additionally,

partners often felt frustrated that the expeditioner was unable to provide adequate social support (due to either geographic dislocation or omission) to them during this period, with some choosing to not disclose issues to the expeditioner if they felt that they would not be able to help with managing them.

*Trust:* As demonstrated within the pre-departure period, trust referred to the degree to which partners were confident in their own ability and the ability of the expeditioner to successfully negotiate this and future stages of the Antarctic employment experience. However, it also referred to the trust that the expeditioner would remain faithful to them during the absence period. Without this trust partners indicated that they would not be confident in their ability to negotiate future periods of the Antarctic employment experience due to worry and doubt about the expeditioner's well-being, whether they and the expeditioner would be supported, and whether their relationship would continue.

*Empowerment:* When partners experienced trust, it allowed them to also experience a degree of empowerment associated with the development of new skills and experiences that otherwise may not have been available to them, or that they may have subverted if the expeditioner was present. In particular, the ability to successfully negotiate a period of time without the expeditioner and develop their skills in new areas was frequently identified. It was this sense of empowerment that appeared to most strongly facilitate adaptive outcomes during the absence period.

#### *Temporal Patterns of Single Expeditioner Responses*

As incomplete data sets were excluded from analyses, temporal patterns of responses can be statistically analysed. The relative frequency of each positive theme identified for single expeditioners at each month is presented in Table 14. From this it can be seen that the relative frequency with which each theme was reported varied over time, with

fluctuations and degradations in thematic response profiles. This variation over time occurred at both the individual and group level of analysis.

Although the most frequently reported positive theme at month 1 was team dynamics, there was little observable differentiation between themes at this time. Similarly, there was little observable differentiation between themes at months 2 and 3, although the most frequently reported theme did change (environment and field trips respectively). At months 4 through 11, field trips were reported observably more often than all other themes, although comparison of 95% CI identified that these differences were non-significant. At month 12 recreational activities were reported most frequently, whilst at month 13 skill development was emphasised - again differences from other thematic response frequencies were non-significant. At months 14 through 18 equal weighting was afforded field trips, skill development, and team dynamics.

The lack of significant findings despite observable differences in frequencies of thematic responses may relate to reduced sample sizes as the duration of measurement increased. More generally however it can be seen that most themes are centred on individual or work factors and only two (social support and communication with family/friends) on relationship factors. Perhaps as a result of this, at no time point did endorsement of relationship themes exceed work and individual themes.

The relative frequency of each negative theme identified for single expeditioners at each month is presented in Table. As was evident for the positive themes, the relative frequency with which each theme was reported varied over time, with fluctuations and degradations in thematic response profiles. Again this variation over time occurred at both the individual and group level of analysis.

There were few observable differences in relative frequencies of negative response themes from months 1 through 8. However, work underload was reported most frequently at months 1 and 2, and serious injury/death of a team member reported most

frequently at months 3 through 5. Interpersonal tensions and serious injury/death of a team member were reported with relatively equal frequency in months 6 through 8. When examining data from seasons in which serious injury/death did not occur (2006/2007), work underload and interpersonal tensions remained as the most frequently endorsed items at these same time periods. From months 9 through 18 serious injury/death of a team member was reported observably more often than all other negative themes although comparison of 95% CI identified that these differences were non-significant which may be attributable to small sample sizes in these subsets.

When visually comparing the positive and negative response profiles for single expeditioners, some interesting similarities occur. For example, the response profile for the positive theme of field trips is very similar to that of the negative theme of interpersonal tensions – there is a small increase from months 1-3, and observable increase in relation to both baseline and other thematic measures from months 4 through 9, no endorsement in months 12 and 13, and an increase in months 14 and 15. This then may indicate a relationship between these two thematic categories. As noted within the positive theme categories identified for expeditioners, the majority of themes centre on individual and work factors rather than relationship factors.





Table 15

### *Temporal Response Patterns of Negative Qualitative Response Profiles for Single Expeditioners Across the Absence Period*

[illegible]

### *Temporal Patterns of Partnered Expeditioner Responses*

As demonstrated within single expeditioner response profiles, the relative frequency with which partnered expeditioners reported each theme was reported varied over time, with fluctuations and degradations in thematic response profiles (Tables 16 & 17). This variation over time occurred at both the individual and group level of analysis. Of note, there was a high degree of overlap demonstrated between thematic responses provided by single and partnered expeditioners across both positive and negative thematic categories such that discussion of these is largely redundant.

As noted within the positive theme categories identified for single expeditioners, the majority of themes centred on individual and work factors rather than relationship factors. However, the relationship theme of separation from family/friends was consistently rated as highly as other work and individual factors including restrictions and interpersonal tensions whilst the pattern for concern for partner was less consistent.

### *Temporal Patterns of Partner Response Profiles*

The relative frequency of each negative theme identified for partners at each month is presented in Table 18. As was demonstrated within the expeditioner sample, it can be seen that the relative frequency with which each theme was reported varied over time, with fluctuations and degradations in thematic response profiles. Again as demonstrated in the expeditioner sample, variation over time occurred at both the individual and group level of analysis.



Table 17

*Temporal Response Patterns of Negative Qualitative Response Profiles for Partnered Expeditioners Across the Absence Period*

[illegible]

Unlike the other response profiles discussed, the expeditioner absence is clearly the most frequently endorsed negative themes reported by partners at month 1 and 2 although not significantly so (Table 18). Work overload and relationship strains were also highly endorsed when compared to other response categories at this time. At months 4 and 5 lack of consultation emerged as the most highly endorsed negative theme for partners (Table 18). From months 6 through 11 there was little differentiation between response profiles, although lack of consultation was often endorsed more highly than other categories. From months 11-15 the absence of the expeditioner was clearly identified as the most negative aspect of the partner experience (Table 18).

The relative frequency of each positive theme identified for partners at each month is presented in Table 19. As was evident for the negative themes, the relative frequency with which each theme was reported varied over time, with fluctuations and degradations in thematic response profiles. Again this variation over time occurred at both the individual and group level of analysis.

Although the most frequently reported positive theme at month 1 was communication with expeditioner, there was little observable differentiation between themes at this time. Similarly, there was little observable differentiation between themes at months 2 and 3, although the most frequently reported theme did change between these months (communication with expeditioner and self-development). At months 4 and 5 empowerment was reported observably more than all other positive response themes, although comparison of 95% CI identified that these differences were non-significant. An interesting bimodal distribution of categorical endorsements occurred at months 6, 7, and 8 such that empowerment, self-development, increased self-focus, and communication with expeditioner were clustered together and endorsed significantly more than the cluster comprising social support, anticipation of return, and expeditioner development. This disappears at month 9.

At month 7 and for the remainder of the absence period empowerment was the most frequently reported theme, although the observable differences were non-significant. As previously mentioned when discussing expeditioner response profiles it is likely that this was due to relatively smaller sample subsets at these time points.

An interesting observation is that as the focus on the expeditioner decreases (expeditioner development) personal focus emerges as the more frequently endorsed theme of partners responses (i.e. empowerment, self-development, and increased self-focus) (Table 19).

When comparing the negative (Table 18) and positive (Table 19) response profiles for partners no obvious parallels emerge. In the first three months of expeditioner absence, positive experiences are focused on relationship factors including communication with the expeditioner and expeditioner development. However, it appears that after four months of expeditioner absence individual factors are more readily identified as positive experiences (e.g. empowerment, self-development). In contrast, when examining negative response categories it is evident that relationship related factors (i.e. absence of the expeditioner) are emphasised in the first two months, although steadily decline until the 12 month mark. The individual factor of overload is consistently endorsed throughout the absence period.

#### *Comparing Expeditioner and Partner Temporal Response Patterns*

Due to the high degree of similarity between single and partnered expeditioner qualitative response profiles (e.g. thematic response categories are almost identical as are the relative endorsement of these over time; see Tables 14 through 17), results have been collapsed across these categories. Results indicated limited overlap in the experience reported by expeditioners (Tables 14 through 17) and partners (see Tables 18 & 19) during Antarctic absences. In fact, one of only two direct overlaps related to the

positive experience of communication between one another and even then the nature of the response profiles indicates differences in this experience. Expeditioners (both single and partnered) reported this theme minimally from months 1-7 and then a gradual increase in the importance of communication peaking at months 12 and 13 (see Tables 15 & 17).

In contrast partners reported this theme at high levels from months 1 through 8, minimally from months 9-11, with another peak from months 12-18 (see Table 19). Comparison of 95% confidence intervals identified that partners reported communication with the expeditioner as the most positive experience to date significantly more than expeditioners at months 1-7. The minimum difference between the samples occurred at month 6. Response profiles between the two participant samples were most similar between months 9 through 12, both visually and statistically. At peak endorsement levels, partners reported communication more readily (month 1, 26.67%) than expeditioners (months 12-13, 16.67%).

The other direct overlap of categories between single expeditioners, partnered expeditioners, and partners refers to the endorsement of social support as the most positive experience to date. Comparison of profiles indicates that there are observable, although non-significant differences in single expeditioner (see Table 15), partnered expeditioner (see Table 17), and partner (see Table 19) endorsement of social support as the most positive experience to date from months 1-7. During this time the relative frequency of endorsement vacillates between partners being higher at months 1-3, and then partnered expeditioners being higher at months 4-5, and equal endorsement between these two participant categories at month 6. After this time, social support



Table 18

### *Temporal Response Patterns of Positive Qualitative Response Profiles for Partners Across the Absence Period*

[illegible]

Table 19

*Temporal Response Patterns of Negative Qualitative Response Profiles for Partners Across the Absence Period*

[illegible]

becomes increasingly less frequently endorsed by partners, whilst it is increasingly more endorsed by partnered expeditioners from months 8-11 although comparisons of 95% confidence intervals revealed that these were non-significant.

The pattern was more variable for single expeditioners until month 15. Peak endorsement for single expeditioners occurred from months 15-18 (16.67%) partnered expeditioners occurred at months 15-18 (16.67%) whilst peak endorsement for partners occurred at month 6 (10.26%). This indicates that overall, social support was endorsed by both single and partnered expeditioners to a greater degree than partners when examining maximal percentages of endorsement.

A parallel between response profiles appears focused on milestones (e.g. birthdays, anniversaries, general celebrations, etc.). Expeditioners (both single and partnered) identified that one of the most negative experiences during their absence was missing milestones (see Tables 14 & 16 respectively). Similarly, partners reported the inability to share milestones as one of the most negative experiences during the absence period (see Table 18). As demonstrated with the theme of communication, the nature of the response profiles between expeditioners and partners was observably different. For single expeditioners (see Table 14), maximal and only endorsement of this theme occurred at months 4-5 (16.67%).

For partnered expeditioners (see Table 16), the relative frequency of endorsing missing milestones as the most negative experience during the absence period peaked at months 6-7 (3.85% of responses), declined until month 9, and then returned to previous levels at months 10-11 (3.85%). In contrast, partner response profiles (see Table 18) indicated that the inability to share milestones was increasingly endorsed from months 2-5, with a sharp decline from months 8-10. They reached peak endorsement at months 12-15 (16.67%). The only point at which partners endorsed this theme less relative to expeditioners was at month 10. Comparison of 95% confidence intervals indicates that partners reported the inability to

share milestones significantly greater than expeditioners reported the missing of milestones at month 5. Due to smaller sample sizes at months 11-15, the observable differences in response profiles did not reach significance. However, the maximal endorsement of the inability to share milestones reported by partners (months 12-15, 16.67%) was equal to that endorsed by single expeditioners, but higher than the maximal endorsement of missing milestones by partnered expeditioners (months 6-7; 10-11, 3.85%).

Overall, both single and partnered expeditioner responses can be broadly categorised as focused on work-related issues, personal issues, and to a lesser extent relationship issues. In contrast partner responses were categorised as focused on personal issues and relationship issues, and there were fewer positive and negative response themes overall when compared to expeditioners. A further point of interest is that whilst some expeditioners (both single and partnered) indicated that they could not identify the most positive or negative experience to date at times during the absence period, this was not the case for partners who always identified a specific experience at each time period.

#### 7.4 Discussion

The aim of this phase of the study was to compare the psychological health of single expeditioners, partnered expeditioners, and partners throughout Antarctic absence to provide insight into factors that may facilitate positive adaptation at this time. In line with previous research, it was hypothesised that: *H1*) Partners would report significantly higher levels of psychological distress compared to single and partnered expeditioners at all stages of Antarctic absence. However, due to the similarity in experiences between single and partnered expeditioners, there would not be significant differences in psychological distress between these participant categories; *H2*) All participant categories would demonstrate fluctuations in well-being over the course of the Antarctic absence period; and *H3*) The themes identified within qualitative responses would differ as a function of participant

category such that both single expeditioners and partnered expeditioners would report more work-related themes than partners, and partnered expeditioners would report more relationship-related themes than single expeditioners.

### *Changes in Well-Being During the Absence Period*

The hypothesis predicting that partners would report significantly higher levels of psychological distress compared to both single and partnered expeditioners at all stages of the Antarctic absence received partial support. Within the category of participants who experienced an absence of three-six months (Figure 4), partner distress levels were significantly higher at all measurement points. Within the category of participants who experienced an absence of 7-10 months (Figure 5), partners reported significantly higher levels of distress than both expeditioner categories at all time points except month 2, although at this time partnered expeditioners reported significantly higher levels of distress than single expeditioners. Within the category of participants who experienced an absence of 11-14 months (Figure 6), partners reported significantly higher levels of distress at all time points except months 9-12. Within the category of participants who experienced an absence of 15-18 months (Figure 7), partners reported significantly higher levels of distress at all time points excepting months 9-12 and 14-16. Taken together, these data suggest that partners are more likely to report higher levels of distress compared to expeditioners when considering the entire absence period, although fluctuations in distress levels mean that this is not consistently the case at all time points.

This finding is consistent with research conducted by Taylor and McCormick (1987) that identified increased anxiety in partners regarding the Antarctic absence. It is also consistent with the argument that within the context of prolonged vocational separations, moderate degrees of psychological distress are normal rather than pathological (Bermudes,

1973; Pearlman, 1970); as well as the more general trend for partners to experience higher levels of psychological distress during vocational separations (Beckman, et al., 1979; Isay, 1968; Morrice, et al., 1985; Nice, 1983; Snyder, 1978). However, it is observed that the nature of response patterns over time is similar between both expeditioners and partners such that each participant category concurrently cycles through increasing and decreasing levels of psychological distress.

Of note, partners also reported significantly higher levels of distress prior to departure as well as during the Antarctic absence. Research investigating the pre-departure period in other populations has identified that negative symptoms (e.g., sadness, frustration, resentment, and guilt) are frequently reported which can result in both physical and emotional withdrawal between the expeditioner and their partners (Bey & Lange, 1974; Hill, 1949; Knapp & Newman, 1993). Therefore it may be feelings of being overwhelmed (as indicated in qualitative data) that are the primary differentiating factor between expeditioner and partner distress, and that this continues throughout the Antarctic absence.

In addition to the short-term impact of psychological distress on general functioning, a protracted period in which negative emotions prevail can limit opportunities for future positive adaptation (Fredrickson, 2001; 2003), and therefore may have implications for the quality of the reunion and reintegration experiences of the single expeditioners, as well as partnered expeditioners and partners within the relationship unit. In contrast, expeditioner distress may be attenuated by ready access to a social support network that are undergoing the same challenges (i.e. fellow expeditioners) and can identify with these issues, even if not in an overt manner. Thus longitudinal investigations such as the current study provide insights as to whether these factors do influence both short and long-term outcomes, and the mechanisms by which this occurs. In turn, articulation of both processes and outcomes facilitated by such research designs provides insights into the development of proactive

prevention and intervention programs targeting factors which influence both positive and negative adaptation.

The hypothesis predicting that all participant categories would demonstrate fluctuations in well-being over the course of the Antarctic absence period was supported. Regardless of the duration of the absence experience, fluctuations in well-being were observable with analyses of quantitative measures as well as qualitative response profiles providing insights into factors influencing these indices. Fluctuations in mood, behaviour and performance have been repeatedly demonstrated in Antarctic expeditioner populations, although the nature and temporal patterns of these fluctuations have varied (Brennan, et al., 2005; Decamps & Rosnet, 2005; Palinkas & Housel, 2000; Steel, 2001; Suedfeld & Steel, 2000; Weiss, et al., 2007). Despite these differences however, it would appear that there are some consistent factors that influence these measures including both physiological and psychological mechanisms, and both internal and external events.

#### *Qualitative Response Themes During the Absence Period*

The hypothesis predicting that qualitative themes would differ as a function of participant category was partially supported. Single and partnered expeditioners did report more work-related themes compared to partners, whereas partners reported more relationship-related themes. However, the high degree of synchrony between single and partnered expeditioner qualitative response profiles resulted in no difference between the numbers of relationship-related themes reported between these participant categories. Examination of expeditioner response profiles indicated that there were fluctuations in endorsement of both positive and negative response categories over time. Field trips were endorsed as the most positive experience significantly more often than all other categories from months 4-11.

Field trips encompass a number of positive aspects including the ability to explore and experience the natural environment; take time away from the station confines; achieve respite from work; spend time with individuals of own choosing; avoid individuals with whom interpersonal tensions have developed; and a break in an otherwise predictable routine. The multifaceted nature of this category may partially explain the frequency with which it was endorsed. Another consideration is that months 7 through 11 of an absence often involve staying in Antarctica during the Austral winter. Increased restrictions on mobility outside the stations confines (Lugg, 2005; Decamps & Rosnet, 2005), increased interpersonal tensions with others on station (Gunderson, 1963; Natani & Shurley, 1974; Palinkas, 1992; Stuster, Bachelard, & Suedfeld, 2000), and degradations in mood during this period (Gunderson, 1963; Natani & Shurley, 1974; Palinkas, 1992) may place further emphasis on the escapist quality of field trips.

Serious injury/death of a team member was endorsed as the highest, or equally highest, negative theme from months 3-15. There are a number of inherent dangers posed by the physical environment when working in Antarctica. These include, but are not limited to, extremely cold temperatures, fierce katabatic winds, blizzards, crevasses, and depending on the time of year, prolonged periods of darkness (Palinkas & Suedfeld, 2007). Despite intensive training and safety precautions in regards to these dangers, accidents can and do happen. During the course of this study one death and one serious injury occurred in separate incidents. As the number of respondents endorsing this theme exceeded those who were on station when the incidents occurred, the data indicate that this impacted not only those directly exposed to the event, but also individuals at other stations.

It is also consistent with research investigating other populations (e.g. disaster response workers, police officers) which has demonstrated a 'ripple effect' in that the impact of challenging experiences extends beyond those immediately involved to include more distal



members of the community (Paton & Smith, 1995; Taylor, 1998; Violanti, 1996), including those at other stations as well as employees working in the AAD Head Office and partners who remain in Australia. This further indicates that when such events occur, it is important to provide support and intervention to all expeditioners (as was undertaken by the AAD) but also partners and head-office staff, not only those with direct exposure.

Relatively equal numbers of positive (13) and negative (14) themes were identified within the expeditioner sample. Of note, despite reports that differences in group dynamics between stations and across years can influence thematic response profiles (Wood et al., 2000) there were overlaps between positive and negative themes identified in Wood et al. (2000) and the present study. For example, field trips were identified as one of the most positive experiences during Antarctic absence both by Wood et al. (2000) as well as within the current study. Other similarities between results of the current study and those reported by Wood et al. (2000) relate to positive experiences of festivities (categorised as celebrations in the current study), goal attainment, social support, and work. Within the negative themes parallels between the results reported by Wood et al. (2000) and the current study are again evident. Both studies identified that conflict (interpersonal tensions within the current study), and injustice (unfair treatment) were identified as negative experiences during the Antarctic absence period.

The similarities evident between the results of these two studies would suggest that there are certain positive and negative experiences that are more likely to be experienced regardless of differences in events occurring from year to year, social milieu, or which station expeditioners are residing in. Furthermore, as expeditioners were required to report on the most positive or negative experience to date it is likely that these will be more robust across cohorts as opposed to more transient experiences (e.g. only reflecting on the last month) that may more readily differ between years and across stations.

The model presented to account for expeditioner adaptation (figure 4) to the absence period again reinforced the interdependence between individual, organisational, and relationship level factors. In contrast, the model presented to account for partner adaptation (figure 5) did not identify organisational factors to influence adaptation during the absence period – instead, it emphasised the links between individual and relationship level factors. Thus it appears that partner perceptions of the absence period are primarily focused on the interaction between individual and relationship factors, whereas the expeditioner perceptions are spread over individual, organisational, and relationship factors – with a particular emphasis on organisational factors. Of note however is the identification of empowerment as an important predictor of adaptation within both cohorts. This finding is consistent with previous research which has also emphasised the importance of empowerment in resilience and adaptation processes, including the Stress-Shield model of resilience and that reported by Shih (2004) who found that when challenges are considered empowering as opposed to depleting, positive adaptation results.

The observed differences in not only the categories contained within each model, but also the themes that comprised each category, suggest increased schematic divergence between expeditioners and partners during the absence period. This is perhaps not surprising considering the increasingly different experiences and reduced communication occurring between them, two factors identified by McCubbin and McCubbin (1993) as pivotal in the development of a shared relationship schema. As such, this divergence between schematic representations of the experience (particularly in relation to the relationship unit) may have important implications for the reunion period.

There were differences between positive and negative experiences in terms of the relative endorsement of work, individual, and relationship themes over time. Regarding positive experiences, the relationship theme of ‘communication with partner’ was minimally

endorsed relative to other work and individual themes up until month 8. After this time it was endorsed more frequently, with a peak at months 12-13. It is possible that the limited endorsement of ‘communication with partner’ as the most positive experience to date within the early part of the absence period is due to contextual factors. The nature of Antarctic employment necessitates that work-related factors are prioritised in order to ensure expeditioner safety, competence, and performance. It follows that if these issues are prioritised it is more likely that they will feature as the most positive, or most negative by virtue of their accessibility. This does not mean that relationship factors are not important, but suggests that in terms of daily functioning they are not as important as work or individual factors and may also influence the observably different pattern of response profiles demonstrated between expeditioners and partners.

Partner response profiles also demonstrated fluctuations in positive and negative theme endorsement over time. Empowerment was the most frequently endorsed positive theme overall, however when examining the temporal data, did not emerge as such until month 4. Prior to this communication with expeditioner was reported most frequently. This suggests that over time the relative frequency of endorsing relationship related factors as the most positive aspect of the absence experience declined and was replaced by individual factors, namely empowerment. The reason this may be delayed relative to expeditioner profiles is the lack of a catalyst. For the expeditioner, arrival in Antarctica provides a clear catalyst for shifting in priorities to occur – they are removed from their routine environment, existing social networks, and are often under time pressures to achieve work-related goals. In contrast, the partner (often) remains in their routine environment, continues interacting with existing social networks, and remains under similar levels of work-pressure to those when the expeditioner is present. Thus the re-prioritising of issues may take longer.

A similar pattern of initially endorsing relationship themes which are then succeeded by individual themes was evident for the negative experiences reported by partners. Absence of the expeditioner was reported as the most negative theme from months 1-3, however was replaced by overload from months 4-10. Absence of the expeditioner again became salient at months 12-15. In addition to anecdotal evidence, literature detailing the impact of vocational absences on the remaining partner has consistently demonstrated the role of overload in impacting physical and psychological health (Stewart & Donald, 2006; Striker, Dimberg, & Liese, 2000). This is often associated with completing routine tasks, as well as those normally performed by the absent individual (Stewart & Donald, 2006). The pattern of endorsement of overload as the most negative experience to date with absence of the expeditioner anchoring it prior to month 4 and post month 11 may indicate an influence of expeditioner psychological presence or absence. The impact of psychological presence or absence on the functioning of partners remaining at home whilst their partner is absent was first discussed by Hill in 1949.

The response profiles of partners within the current study shares similarities with experiences identified in other cohorts exposed to vocational separations. For example, in their study of partner appraisals of work-related absences Stewart and Donald (2006) found that partners endorsed career advancement of the absent individual as a positive aspect of the absence experience. Within the current sample this was also identified in that partners identified expeditioner development as one of the most positive experiences of the absence period. Similarly, Stewart and Donald also found that partners reported independence and space as a positive outcome of work-related absences.

Within the current study partners identified that one of the most positive experiences of the absence period was increased self-focus. In terms of negative experiences, as was found in the current study, Stewart and Donald reported overload as a negative aspect of

work-related absences experienced by partners. Loneliness, relationship strain, lack of support, and the absent individual ‘missing out’ (on important events) were also reported (Stewart & Donald, 2006). Again, parallels within the current study are evident with each of these themes being endorsed. The high degree of overlap between themes identified within the current research and those reported by Stewart and Donald would suggest that partner experiences of Antarctic absences are similar to those associated with other vocational separations. As such, it may be possible to implement strategies developed in other organisational contexts to support Antarctic partners.

Broadly speaking, thematic categories identified within expeditioner responses focused on work-related issues, personal issues, and to a lesser extent relationship issues. In contrast, partner responses focused more on relationship and personal issues and reported fewer positive and negative themes overall. These findings would suggest that a complex interrelationship exists between the domains of work (expeditioners), individual (expeditioners and partners), and relationship factors (expeditioners and partners) which influences the differential experience of Antarctic absences for expeditioners and partners (i.e. whilst expeditioner responses primarily emphasise work followed by personal and relationship issues, partners emphasise relationship and personal issues). As such it emphasises the need for more holistic approaches to examining the experience of Antarctic employment that go beyond assessment of the individual to include work/organisational and relationship factors, as well as how the relationships between these factors change over time.

Both systems and role theories identify that changes in routine and goal prioritisation (e.g. the relative importance of work, individual, and relationship goals) necessitated by work separations place demands on the relationship unit that require readjustment of roles for both the expeditioner and partner not only during the absence, but upon return home (Barling, 1990). Put another way, the cognitive organisation of priorities demonstrated during

Antarctic absences that facilitate adaptation and performance (e.g. focus on work or self) require a shift upon reunion to facilitate successful relationship reintegration. Part of this process involves developing a shared understanding or relationship schema between expeditioners and partners regarding their experiences (McCubbin, Thompson, Thompson, & McCubbin, 1993; Wenzel & Harvey, 2001). Results of the present study would suggest that facilitating this shared understanding is particularly important in Antarctic populations as there was limited overlap in the experiences reported by expeditioners and partners. This argument is further emphasised by research which has demonstrated that shared relationship schemas can facilitate positive adaptation and resilience in the face of challenging situations (McCubbin et al.) which could include vocational absences.

Although during the absence experience both expeditioners and partners endorsed communication with one another as a positive experience, there were observable differences in the temporal sequencing of these endorsements. In particular, partners reported this as the most positive experience to date significantly more than expeditioners from months 1-7. Discrepancies in endorsement during this period suggest differences in the relative salience of communication to expeditioners and partners during this time. If this is the case, and partners perceive this as them being less important to the expeditioner than work-related factors, it is possible that dissatisfaction and resultant relationship strain may occur which may be carried over to the reunion and reintegration period.

Another issue to consider is the endorsement of social support as the most positive experience to date. From months 9-15, this theme is not endorsed at all by partners. In contrast, expeditioners reach peak endorsement of this theme from months 9-11, as well as month 15. The disparity in response profiles suggests that if partners are providing expeditioners with social support during the times at which it is maximally endorsed, the positive effects of such support are not reciprocal as partners report no endorsement at these

times. If this is the situation, it is possible that resentment may occur if partners feel they are providing this support, with none in return which would be consistent with research identifying the importance of reciprocity in the provision of social support, in that relationship satisfaction is enhanced when both partners' inputs and outputs are similar (Antonucci & Jackson, 1990; Hatfield, Uten, & Traupmann, 1979; Lu, 1997; Lu & Argyle, 1992).

Alternatively, it is also possible that expeditioners are receiving this support from individuals outside the relationship, most likely work colleagues. This is to be expected considering the nature of the friendships engendered by spending long periods of time working and living together whilst in Antarctica. The implications of these discrepancies in the source and provision of social support between expeditioners and partners is likely to affect both short and long-term interactions between them. In particular, it is possible that increased reliance on peers and decreased provision of support for partners as demonstrated by expeditioners during the absence period may continue post-return thereby prolonging the asymmetric provision of support and negatively impacting reunion dynamics. As a result, the nature and length of the reintegration period may also be impacted by these factors thereby influencing the level of adaptation demonstrated within both populations.

The only negative theme that was paralleled within expeditioner and partner samples related to missing milestones. For expeditioners, the focus was on missing the event. In contrast, for partners it was that they could not share these milestones with the expeditioner. The nature of this thematic category is such that it is precipitated by meaningful events such as birthdays, anniversaries, and other celebrations. Comparison of response profiles between expeditioners and partners suggests that this issue was relatively more important for partners (in that it highlighted the unique aspects of their non-routine circumstances whereas expeditioners were working within a framework in which their role was normative, expected

and therefore considered more routine), as it was consistently endorsed at higher levels throughout the majority of the absence period. It also suggests that this experience may have had a cumulative effect on partners (i.e. the more milestones missed, the more this was endorsed as the most negative experience) whereas this is not the case for expeditioners who appear to endorse this theme at the time of missing the milestone, but move on from this once the event has passed.

The finding that partners reported fewer positive and negative themes overall when compared to expeditioners is worth consideration. This may suggest that the partner experience is more homogeneous than the expeditioner experience. The implications of this are that partners may benefit from interacting with other individuals in a similar situation (i.e. partners of expeditioners) to help normalise their experiences and provide coping strategies during this time. Alternatively, it may indicate that the unique nature of Antarctic employment and the experiences it engenders for the expeditioner is not paralleled outside of this context and cannot be directly compared. In this instance it provides further impetus for intervention strategies that focus on developing a shared understanding as a basis for reunion and reintegration to effectively occur.

Differences in qualitative themes are likely to be influenced by differences in the demands associated with each role. Expeditioners are working in Antarctica, and unable to clearly demarcate occupational and social roles which is reflected in the high salience of work in their experience. They are removed from many routine demands such as paying bills, maintaining a household and balancing work and relationship commitments. Furthermore, expeditioners are residing within a culture in which this is the norm. In contrast, partners continue to negotiate these challenges without the support normally provided by the expeditioner. This discrepancy in experiences may contribute to differences in psychological health, as well as influence the nature of reunion and reintegration.



Shared experiences and understanding form the basis of most intimate relationships (Wenzel & Harvey, 2001). Therefore prolonged separation from an intimate partner (as occurs with Antarctic employment) has the potential to impact on this aspect of relationship functioning, and may also be an underlying source of psychological distress. Whilst this process has been acknowledged anecdotally, this study provides systematic evidence of the nature of these differences, and potential implications for the reunion and reintegration process.

### *Implications for reunion and reintegration*

Previous research has identified that the dynamics of reunion and reintegration following extended absences is predictable from the functioning patterns demonstrated during the separation experience (Busuttil & Busuttil, 2001; Hill, 1949; Somerfield & McCrae, 2000). It is arguable that differences in experience observed between expeditioners and partners during Antarctic absences and the impacts of these necessitates different methods of coping, and therefore functioning patterns, during this period.

Consistent with previous research conducted by Norris et al. (2008), results of the current study indicate marked differences between expeditioners and partners in the number, content, and frequency of positive and negative themes endorsed during the course of an Antarctic absence. This suggests not only differences in experience, but also different emphases on the importance of these experiences. Potential challenges for the reunion and reintegration experience of expeditioners and partners can result from this as shared experiences and understanding form the basis of most intimate relationships (Wenzel & Harvey, 2001) – thus the absence of such shared experiences may inhibit understanding of the other person's perspective. This may help to explain why anecdotal evidence suggests that the reunion and reintegration period following Antarctic employment can be more

challenging than the period of absence - a lack of shared experience, and therefore understanding. It also emphasises the importance of preparing expeditioners and partners alike for such challenges through education delivered during the pre-departure period (which facilitates planning and preparation for both parties) and providing supports/strategies to assist couples who have greater difficulty negotiating this period. The benefit of conducting research such as this is that it allows for focused interventions to be developed in preparation for these anticipated issues (proactive behaviour) rather than in response to these issues (reactive behaviour).

An important consideration is that expeditioners and partners alike were asked to endorse the most positive and most negative experience to date. This does not preclude simultaneously experiencing other positive or negative events, but requires the participant to create a cognitive hierarchy of events and report according to this hierarchy. What it does however enable is a focus on key experiences that may be driving behaviour, mood, and performance during this period which can in turn be addressed through proactive strategies to either enhance protective factors or mitigate negative factors. One approach that is consistently endorsed in coping literature is psychoeducation regarding these issues within training programs, thereby facilitating preparation for and normalising of such events. In doing so, it promotes a sense of predictability and control over the situation – factors which have been associated with positive coping and adjustment strategies (e.g. Brown, Mulhern, & Joseph, 2002; Carver et al., 2000; Peacock & Wong, 1996). These factors have also been implicated in resilience and growth outcomes (Schieman & Plickert, 2008). Thus expeditioners and partners can plan for both the absence period, as well as consider how these experiences may impact on their relationship upon the expeditioner's return.

In summary, results of the current study demonstrate fluctuations in mean levels of well-being throughout the course of the absence period regardless of absence length or

participant category, and that there are significant differences in overall well-being as a function of demographic variables. Furthermore, it was identified that partners frequently report significantly higher levels of distress compared to expeditioners at the same time point. This results parallels findings from the pre-departure data indicating that partners reported lower levels of satisfaction and well-being compared to the expeditioner samples.

Again consistent with results of the pre-departure data, there were clear differences in the cognitive constructions and interpretations of experiences as a function of participant category i.e. expeditioners and partners. The observed differences are likely to stem from both pre-existing differences identified during the pre-departure period that are then exacerbated by geographic dislocation, and differences in the actual experiences engendered by different roles (e.g. working in Antarctica vs. routine as normal).

Overall, results from the absence period demonstrate continued and increased divergence between expeditioner and partner response profiles in tandem with increasingly different experiences and cognitive integration of these. The implications of these differences are likely to affect both short and long-term interactions between them with the nature and length of the reintegration period also potentially being impacted by these factors, thereby influencing the level of adaptation demonstrated within both populations. Results also emphasises the importance of preparing expeditioners and partners alike for such challenges through education delivered during the pre-departure period (which facilitates planning and preparation for both parties to negotiate the absence period) and providing supports/strategies to assist couples who have greater difficulty negotiating this period.

The benefit of conducting research such as this is that it allows for focused interventions to be developed in preparation for these anticipated issues (proactive behaviour) rather than only in response to these issues (reactive behaviour). Thus longitudinal investigations can provide insights as to whether these differences in cognitive appraisal and

integration between expeditioners and partners do influence both short and long-term outcomes, and the mechanisms by which this occurs. In turn, articulation of both processes and outcomes facilitated by such research designs provides insights into the development of proactive prevention and intervention programs targeting factors which influence both positive and negative adaptation.

CHAPTER EIGHT  
THE REUNION PERIOD

## 8.1 Reunion

The reunion phase of employment begins upon the absent individual's physical return to their home environment and involves physical and psychological adjustment to the physical and social milieu. Although there are discrepancies in the theorised duration of this period, most estimates indicate that the reunion period spans two-three months post-return before more long-term adaptation processes begin (Blount & Curry, 1992; Kelley, 1994; Logan, 1987; Rabb, Baumer, & Wiesler, 1993; USUHS, 2004). Numerous authors have identified that the reunion period encompasses a 'honeymoon' phase which is typified by excitement and positive interactions, gradually overshadowed by awareness and acknowledgement of adjustment difficulties at both the individual and relationship level which can lead to negative affective experiences and interpersonal interactions (Norwood, Fullerton, & Hagen, 1996; van Breda, 1997).

Whilst some authors have reported that reunion experiences are influenced by preceding phases of the employment experience (Adler & Castro, 2001; Busuttil & Busuttil, 2001), others have argued that cognitive constructions of the reunion period are more influenced by discrepancies between idealised and actual experiences during this time – for example underestimating the impact of decreased autonomy upon the sojourners return, experiencing more negative than positive interactions, and conflicting role expectations (Kelley, 1994; Logan, 1987; Norwood, Fullerton, & Hagen, 1996; Stafford & Merolla, 2007; Stafford, Merolla, & Castle, 2006). However, despite the challenges associated with the reunion period there is increasing acknowledgement that most individuals who experience vocational absences do not experience levels of distress that significantly impact their well-being at this time (Blount & Curry, 1992; Kelley, 1994; Oliver, 1979; Rabb, Baumer, & Wiesler, 1993). For example, Popkin, Stillner, Hall, & Price (1978) identified that although following return from Antarctic employment expeditioners demonstrated cognitive slowing, emotional withdrawal,

indecisiveness and poor communication they were not personally distressed by these experiences. Of note however, it was identified that these symptoms were distressing for partners who seemed more aware of the impact on expeditioner functioning.

Research by Oliver (1979) suggests that challenges specific to expeditioners upon return from Antarctica relate to difficulties in adjusting back to the high-stimulus environment of normal society including increased numbers of people, traffic, colours, noise, and other seemingly 'normal' factors which are often forgotten by the individual during their absence (Amen, Jellen, Merves, & Lee, 1988). In this way it could be argued that the process involved in negotiating changes in the physical and social environment encountered upon return from Antarctica place significant demands on the psychological resources of expeditioners independent of the challenges associated with reuniting with an intimate partner. In contrast, partner experiences are likely to primarily centre on psychological factors relating to renegotiation of roles and routines to facilitate expeditioner re-entry into the relationship unit.

As such, both expeditioners and partners could be expected to experience decrements in subjective health and well-being at this time which is an important consideration when mapping factors that facilitate positive adaptation at this time. However, considering that previous researchers have identified that expeditioners demonstrate adaptive coping patterns that facilitate adjustment to challenging environments (Watts, Webster, Morley & Cohen, 1993) it is likely that any distress encountered upon return from Antarctica will be short-lived and will largely resolve over time.

In regards to the social parameters, expeditioners will be relocated from a social environment which has been characterised by enforced interactions engendered by station life and a general lack of social novelty (Carrere & Evans, 1994; Sandal & Palinkas, 2006; Suedfeld, 1998). Furthermore, research has demonstrated that unique

social norms and communication patterns can develop within Antarctic populations who winter together which may not be easily understood outside of these contexts (Cravalho, 1996) similar to the sense of cohesion that develops in high-risk professions (e.g. police officers, disaster response workers) that facilitates coping in the short-term but often results in difficulty interacting with others and maintaining relationships external to the vocational group.

In contrast, social environments outside Antarctica are characterised by greater social novelty, interactions with a greater number of individuals and more control over the nature, frequency, and duration of such contact. Returning from Antarctica by ship allows gradual exposure to new social environments and larger numbers of people which may facilitate better adaptation to non-Antarctic environments more readily than returning by plane which does not provide for the same level of social stimulation, and thus it is arguable that return to Australia (RTA) transportation method would influence expeditioner well-being at reunion. Research conducted by Ursano & Norwood (1996) reported that rapid returns from military deployments facilitated by air-based personnel movement increased the negative challenges associated with the reunion period for some soldiers.

However, as demonstrated in previous phases of this research project, expeditioner experiences of Antarctic employment are influenced by a combination of individual, organisational, and relationship level factors. For this reason the experience of partners needs also to be considered as it will arguably influence (either directly or indirectly) partnered expeditioner well-being during the reunion period. Research on military partners of Dutch soldiers identified that partners were more significantly affected by challenges associated with reunion, resulting in higher levels of distress, although the emotions reported by partners paralleled those reported by soldiers (e.g. irritability, anger, worry) (Dirkzwager et al., 2001). Additionally, this research



identified that partners reported lower levels of relationship satisfaction and higher levels of somatic distress compared to soldiers. Furthermore, whilst Paton et al. (2003) identified that positive change could result in either member following vocational absences; it often adversely influenced the well-being of the other trying to accommodate these changes.

Other researchers who have undertaken qualitative analyses of vocational absence experiences have emphasized the need for a shared sense of purpose (understanding) between sojourners and significant others (McCubbin, McCubbin, & Thompson, 1993) in order to minimise the potential of negative experiences during the reunion period. To facilitate this, effective communication needs to occur. However, communication difficulties have been reported as common during reunion due to competing agendas and a divergence in relationship schemas resulting from the absence period (Kelley, 1994; Logan, 1987; McCubbin et al., 1993; Rigg, 1990).

Thus the aim of the current phase of the study was to investigate single expeditioner, partnered expeditioner, and partner functioning two months post-RTA to determine the level of positive change, negative change, and adaptation that has occurred following the Antarctic employment experience. It was hypothesised that:

*H1.* Both single and partnered expeditioners would report significantly higher levels of life satisfaction and well-being compared to partners, and that single expeditioners would report significantly higher levels of life satisfaction and well-being compared to partnered expeditioners.

*H2.* Single and partnered expeditioners who return by plane will report significantly lower levels of well-being compared to those who return by ship, and that this difference will be mirrored in partner response profiles.

*H3.* All participant categories would report significantly higher negative change scores compared to positive change scores at reunion.

*H4.* Changes in outlook reported at reunion will be predicted by a combination of individual, relationship, and work-related factors during pre-departure, absence and reunion periods.

## 8.2 Method

### *Participants*

The same expeditioners and partners participated in all phases of the research project. Participant characteristics are detailed on pages 58 and 88 of the thesis.

### *Materials*

#### *Global Measures*

*Quality of Life:* The World Health Organisation Quality of Life – Brief Inventory (WHOQOL-BREF) (WHOQOL Group, 1998) was utilised to assess individual perceptions of current quality of life.

*Health and well-being:* The Hopkins Symptom Checklist – 21 (HSCL-21; Green, Walkey, McCormick, & Taylor, 1988) was used to ascertain the current level of health and well-being experienced by participants during the reunion period.

#### *Individual Factors*

*Changes in Outlook:* The Changes in Outlook Questionnaire (CiOQ; Joseph, Williams, & Yule, 1993) was utilised to assess self-reported positive and negative change following the Antarctic employment experience. The CiOQ comprises two subscales assessing positive and negative change. The instrument asks respondents to report their agreement with a series of statements according to a six-point Likert scale in which 1=*strongly disagree* and 6=*strongly agree*. Possible scores on the subscale measuring positive change range from 11-66 and on the negative subscale from 15-90; higher scores indicate higher levels of positive change and negative change respectively. The authors report internal consistency estimates of .83 for the positive change

subscale, and .90 for the negative change subscale. Cronbach's alpha based on the data from the present study were .91 and .89 respectively.

#### *Organisational Factors*

*Family-Work Interface:* To gain an understanding of the relative contribution of work level factors to the experience of the pre-departure period, participants completed the Work-Family Interference and Family-Work Interference Scales (WFI and FWI) (Carlson & Frone, 2003).

#### *Relationship Factors*

*Relationship Dynamics:* Relationship dynamics were assessed using both the original (for single expeditioners) and a modified version (for partnered expeditioners and partners) of the Family Functioning Style Scale (FFSS) (Trivette, Dunst, Deal, Hamer, & Propst, 1990).

The scales were placed in a counterbalanced order with the demographic questionnaire always the initial item in the package so as to control for any order effects of scale presentation. Due to the number of scales incorporated within the study, not all possible orderings of scales were used. For those counterbalanced orders that were used, there was no significant difference in the scores of any of the measures. Thus data were combined across order for all subsequent analyses.

#### *Semi-structured Interview*

A semi-structured interview provided participants the opportunity to identify experiences relevant to the reunion process not otherwise assessed, thereby allowing new variables regarding the reunion experience to emerge (Appendix H). A series of open-ended questions assessing positive and negative experiences post-RTA, factors that facilitated effective and ineffective adaptation and the level of external assistance required at this time were used to supplement quantitative data and build a more comprehensive understanding of the reunion experience.

### *Procedure*

Two-months post return to Australia (RTA) the previously listed questionnaires were distributed to consenting participants. The items contained in the questionnaires completed by partners were identical to those completed by expeditioners. Expeditioner and partner questionnaires were mailed and returned separately. Additionally, participants were asked to indicate whether they would be willing to participate in an interview based on their experiences at this time. Participants who consented to interviews were then contacted by phone or met the researcher at a mutually convenient location to undertake the semi-structured interview.

## 8.3 Results

### *Analysis Strategies*

Preliminary analyses examined between and within group differences on measures of quality of life satisfaction (as measured by the WHOQOL-BREF), well-being (as measured by the HSCL-21), and positive and negative change (as measured by the CiOQ). These analyses identified that there were no significant differences ( $p > .05$ ) on these measures as a function of absence length, and thus data has been collapsed across absence categories for the preliminary analyses. Additionally, quality of life satisfaction and well-being scores were compared with those recorded at pre-departure. Following this, a series of step-wise regression analyses were performed to determine which factors predicted positive and negative change two months post-RTA (reunion).

### *Quality of Life Satisfaction*

Means and standard deviations for each of the quality of life satisfaction indices measured by the WHOQOL-BREF are reported in Table 20.

### *Between Group Differences*

In order to test the first hypothesis, that both single and partnered expeditioners would report significantly higher levels of life satisfaction compared to partners, and that single expeditioners would report significantly higher levels of life satisfaction compared to partnered expeditioners a 3[group: single expeditioner, partnered expeditioner, partner] x 4 (satisfaction domain: physical, psychological, relationship, environmental) univariate ANOVA was conducted. This analysis identified that at reunion, single and partnered expeditioners reported significantly higher levels of environmental satisfaction compared to partners and norms ( $p < .001$  for all comparisons). There were no significant differences on other measures of quality of life satisfaction ( $p > .05$  for all comparisons).

### *Within Group differences*

#### Single Expeditioners

There were no significant differences in life satisfaction reported by single expeditioners at reunion as a function of demographic variables. A series of repeated measures ANOVAs revealed no significant differences in psychological health satisfaction, relationship satisfaction, or environmental satisfaction between pre-departure and reunion assessments, however single expeditioners did report significantly lower levels of physical health satisfaction at reunion when compared to pre-departure  $F(1, 139) = 6.66, p < .05$  ( $\eta^2 = .05$ ).

#### Partnered Expeditioners

As demonstrated within the single expeditioner category, demographic variables did not influence partnered expeditioner life satisfaction reported at reunion. There were no significant differences in relationship and psychological health satisfaction scores between pre-departure and reunion within this participant category. However, environmental satisfaction was significantly higher at reunion compared to pre-

departure,  $F(1, 282)=7.54, p<.01$  ( $\eta^2=.03$ ) whilst physical health satisfaction was significantly lower at reunion than pre-departure,  $F(1, 282)=20.32, p<.001$  ( $\eta^2=.07$ ).

### Partners

Consistent with expeditioner participant categories, demographic variables did not influence partner life satisfaction scores reported at reunion. Whilst there were no significant differences between pre-departure and reunion scores for relationship and psychological health satisfaction, both physical health,  $F(1, 148)=8.41, p<.001$  ( $\eta^2=.06$ ), and environmental satisfaction scores,  $F(1, 148)=10.44, p<.01$  ( $\eta^2=.07$ ), were significantly lower at reunion compared to pre-departure scores.

### *Well-Being*

Means and standard deviations of well-being scores for each participant category as measured by the HSCL-21 subscales are reported in Table 21.

### *Between Group Differences*

To test the second component of the first hypothesis, that both single and partnered expeditioners would report significantly higher levels of well-being compared to partners, and that single expeditioners would report significantly higher levels of well-being compared to partnered expeditioners a 3[group: single expeditioner, partnered expeditioner, partner] x 4 (satisfaction domain: physical, psychological, relationship, environmental) univariate ANOVA was conducted. This analysis identified that at reunion, partners reported significantly higher levels of somatic distress than both expeditioner categories, as well as norms ( $p<.01$  for all comparisons). Furthermore, both single and partnered expeditioners reported significantly higher levels of somatic distress compared to norms ( $p<.01$  for all comparisons). In contrast, partners reported significantly lower levels of performance difficulties, general feelings of distress, and total distress scores when compared to both expeditioner categories

( $p < .001$  for all comparisons). Furthermore, partners reported significantly lower levels of general feelings of distress and total distress when compared to norms ( $p < .001$  for all comparisons).

To test the second hypothesis, that single and partnered expeditioners who return by plane would report significantly lower levels of well-being compared to those who return by ship, and that this difference will be mirrored in partner response profiles a 2[RTA method: plane, ship] x 4(well-being dimension: somatic, general distress, performance, and total distress) univariate ANOVA was conducted. This analysis identified a trend towards significance ( $p = .056$ ) for expeditioners who returned by plane to report higher levels of total distress at reunion than those who returned by ship. Additionally, there was a trend towards significance ( $p = .059$ ) for partners of expeditioners who returned by plane to report significantly higher levels of total distress compared to partners of expeditioners who returned by ship. There were no significant differences on quality of life measures as a function of RTA transport method for single expeditioners, partnered expeditioners, or partners ( $p > .05$  for all comparisons).

#### *Within Group Differences*

##### *Single Expeditioners*

A univariate ANOVA identified a significant main effect of experience on levels of somatic distress reported by single expeditioners two months post-RTA,  $F(1, 103) = 4.10$ ,  $p < .05$  ( $\eta^2 = .04$ ) with experienced single expeditioners reporting higher levels of distress. There was no effect for length of absence on any measures of well-being derived from the HSCL-21.

Table 20

*Comparing Quality of Life Domain Satisfaction Two Months Post-RTA (Reunion) for Single Expeditioners, Partnered Expeditioners, and Partners*

	Single		Partnered		Partners		Norms	
WHOQOL-BREF	Expeditioners		Expeditioners					
Domain	M	SD	M	SD	M	SD	M	SD
Physical	70.77 <sup>a</sup>	13.40	69.89 <sup>a</sup>	12.95	69.03 <sup>a</sup>	15.00	80.00 <sup>b</sup>	17.10
Psychological	73.81 <sup>c</sup>	12.57	74.78 <sup>c</sup>	12.05	69.85 <sup>c</sup>	6.27	72.60 <sup>c</sup>	14.20
Relationship	72.80 <sup>c</sup>	18.29	72.97 <sup>c</sup>	17.02	74.11 <sup>c</sup>	7.70	72.20 <sup>c</sup>	18.50
Environment	83.21 <sup>d</sup>	12.02	83.70 <sup>d</sup>	11.70	72.02 <sup>c</sup>	8.93	74.80 <sup>c</sup>	13.70

*Note:* Means not sharing the same subscript are significantly different



When comparing single expeditioner measures of well-being with pre-departure scores it was found that somatic distress was significantly higher at reunion,  $F(1, 139)=29.20$ ,  $p<.001$  ( $\eta^2=.17$ ), as were performance difficulty scores,  $F(1, 139)=36.62$ ,  $p<.001$  ( $\eta^2=.21$ ). The same pattern of results was also demonstrated for general feelings of distress,  $F(1, 139)=33.00$ ,  $p<.001$  ( $\eta^2=.19$ ) and total distress scores  $F(1, 139)=62.53$ ,  $p<.001$  ( $\eta^2=.31$ ).

#### Partnered Expeditioners

Experienced partnered expeditioners reported significantly higher levels of somatic distress at two months post-RTA compared to non-experienced partnered expeditioners,  $F(1, 240)=6.50$ ,  $p<.05$  ( $\eta^2=.03$ ). In contrast, there was a trend for experienced partnered expeditioners to report lower levels of performance difficulties at two months post-RTA,  $F(1, 204)=3.85$ ,  $p=.051$ , ( $\eta^2=.02$ ).

When comparing partnered expeditioner reunion measures of well-being with those recorded at pre-departure it was identified that total distress scores,  $F(1, 282)=88.88$ ,  $p<.001$  ( $\eta^2=.24$ ) and somatic distress scores,  $F(1, 282)=25.34$ ,  $p<.001$  ( $\eta^2=.09$ ) were significantly higher at two months post-RTA. The same pattern of results was demonstrated for performance difficulty scores,  $F(1, 282)=46.81$ ,  $p<.001$  ( $\eta^2=.14$ ), and general feelings of distress scores,  $F(1, 282)=88.33$ ,  $p<.001$  ( $\eta^2=.24$ ).

#### Partners

There were no significant differences in partner measures of well-being derived from the HSCL-21 as a function of demographic variables or length of expeditioner absence ( $p>.05$  for all comparisons).

When comparing partner reunion scores with those recorded at pre-departure it was identified that general feelings of distress were significantly lower at reunion,  $F(1,148)=7.64$ ,  $p<.01$  ( $\eta^2=.05$ ). In contrast, somatic distress scores were significantly higher at reunion,  $F(1, 148)=32.31$ ,  $p<.001$ , ( $\eta^2=.18$ ). There were no significant

differences between pre-departure and reunion scores recorded by partners on measures of performance difficulties and total distress.

### *Changes in Outlook*

Means and standard deviations for positive and negative change reported at two months post-RTA are reported in Table 22.

#### *Between Group Differences*

To test the third hypothesis predicting that all participant categories would report significantly higher negative change scores compared to positive change scores at reunion a series of univariate ANOVAs were performed. A univariate ANOVA identified a significant main effect for group on levels of negative change reported at two months post-RTA,  $F(2, 569)=3.97, p<.05$  ( $\eta^2=.02$ ). Post hoc analyses identified that partners reported significantly higher levels of negative change than both single and partnered expeditioners ( $p<.05$  for all comparisons).

Similarly, a univariate ANOVA identified a significant main effect for group on levels of positive change reported at two months post-RTA,  $F(2, 569)=37.42, p<.001$  ( $\eta^2=.12$ ). In this instance post hoc analyses identified that partners reported significantly lower levels of positive change compared to both single and partnered expeditioners ( $p<.001$  for all comparisons).

However, there were no significant differences in positive and negative change scores reported by single expeditioners, partnered expeditioners, or partners as a function of RTA transportation mode (i.e. ship versus air-based RTA).

Table 21

*Comparing Well-Being Two Months Post-RTA (Reunion) for Single Expeditioners, Partnered Expeditioners, and Partners*

	Single		Partnered		Partners		Norms	
	Expeditioners		Expeditioners					
Domain	M	SD	M	SD	M	SD	M	SD
Somatic Distress	10.44 <sup>a</sup>	2.98	10.09 <sup>a</sup>	3.02	11.48 <sup>b</sup>	2.96	9.13 <sup>c</sup>	2.52
Performance Difficulties	13.41 <sup>d</sup>	3.16	13.15 <sup>d</sup>	3.62	11.86 <sup>b</sup>	2.43	11.09 <sup>b</sup>	.32
General Feelings of Distress	12.44 <sup>e</sup>	2.95	12.00 <sup>e</sup>	3.51	10.44 <sup>a</sup>	3.06	15.37 <sup>f</sup>	5.76
Total Score	36.29 <sup>g</sup>	6.53	35.24 <sup>g</sup>	7.55	33.78 <sup>h</sup>	5.23	35.58 <sup>g</sup>	8.52

*Note:* Means not sharing the same subscript are significantly different

### *Within Group Differences*

#### Single Expeditioners

A univariate ANOVA identified a significant main effect of experience on levels of negative change reported two months post-RTA,  $F(1, 103)=5.41, p<.05$  ( $\eta^2=.05$ ), with experienced single expeditioners reporting significantly higher levels of negative change than non-experienced single expeditioners.

#### Partnered Expeditioners

A 2[sex: male, female] x 2(experience: yes, no) univariate ANOVA identified a significant sex by experience interaction for negative change scores reported by partnered expeditioners,  $F(1, 267)=4.90, p<.05$  ( $\eta^2=.02$ ).

#### Partners

A significant main effect of experience was identified for partner negative change scores,  $F(1, 117)=5.68, p<.05$  ( $\eta^2=.05$ ), with non-experienced partners reporting significantly higher levels of negative change compared to experienced partners.

### *Predicting Positive and Negative Change*

In order to test the fourth hypothesis predicting that changes in outlook reported at reunion would be predicted by a combination of individual, relationship, and work-related factors during pre-departure, absence and reunion periods a backwards stepwise regression was performed. However, prior to undertaking this analysis a series of bivariate correlations identified that positive and negative change scores obtained on the CiOQ were highly correlated with all quality of life satisfaction and well-being domains for each participant category although not absence length category. For this reason separate step-wise regression equations were performed for each participant category, but absence categories were collapsed within these.

Table 22

*Changes in Outlook Two Months Post-RTA (Reunion) for Single Expeditioners, Partnered Expeditioners, and Partners*

	Single		Partnered		Partners	
	Expeditioners		Expeditioners			
Domain	M	SD	M	SD	M	D
Positive Change	35.77 <sup>a</sup>	8.79	36.18 <sup>a</sup>	9.03	28.93 <sup>b</sup>	7.72
Negative Change	29.59 <sup>b</sup>	10.80	29.11 <sup>b</sup>	10.99	31.95 <sup>c</sup>	7.25

*Note:* Means not sharing the same subscript are significantly different

Comparison of  $R^2$  identified that the equations in which participant categories were further separated according to absence length category identified no significant improvements over those in which absence length was not differentiated. Furthermore, the highly significant correlations between positive and negative change scores with quality of life satisfaction and well-being renders prediction of variables beyond positive and negative change redundant. Variables entered into each equation were those identified as being significantly correlated with the dependent variable.

Table 23 contains  $R^2$  values for each of the step-wise regression equations performed. Full regression equations and coefficients are contained in Appendix I.

Table 23

*Predicting Positive and Negative Change Scores at Reunion for Single Expeditioners, Partnered Expeditioners, and Partners*

Dependent Variable	Participant Category	Adjusted $R^2$
CiOQ Positive Change	Single Expeditioner	.84
	Partnered Expeditioner	.94
	Partner	.91
CiOQ Negative Change	Single Expeditioner	.68
	Partnered Expeditioner	.91
	Partner	.87

#### *Single Expeditioners*

Eighty-four percent of the variance in positive change scores reported by single expeditioners at reunion was predicted by feelings of purpose within relationships (platonic and familial), levels of internal work interference with family at pre-departure, performance difficulties at month four, and the individual coping strategies of restraint and seeking instrumental social support; performance difficulties experienced at month

1 and total distress at month 5 of the absence period negatively predicted positive change at this time. In contrast, 68 percent of the variance in negative change scores were predicted by performance difficulties at month 1, flexibility (relationship factor) and negatively predicted by Internal FIW (organisational factor) at reunion and somatic distress (individual factor) at month 2 (see Appendix I).

#### *Partnered Expeditioners*

Ninety-four percent of the variance in positive change scores recorded by partnered expeditioners was positively predicted by the use of restraint coping (individual factor), and negatively predicted by total distress scores at reunion (individual factor) and balance between family and other roles at pre-departure. In contrast, 91% of the variance in negative change scores was negatively predicted by the use of active coping (individual factor; see Appendix I).

#### *Partners*

Ninety-one percent of the variance in partner positive change scores reported at reunion was predicted by fulfilment of relationship role expectations at reunion, as well as the level of internal family interference with work occurring. In contrast, 87% of the variance in negative change scores was negatively predicted by pre-departure relationship flexibility, general feelings of distress at month 2, and reunion levels of somatic distress and relationship commitment (see Appendix I)

### *Qualitative Descriptions of Reunion Experiences*

#### *Single Expeditioner Qualitative Response Profiles*

Qualitative themes derived from single expeditioner interviews are contained in Table 24. For single expeditioners, the most positive theme reported regarding the reunion experience regardless of RTA method was the availability of social support (95% CI: 48.56%-64.92%), primarily provided by colleagues with whom they had

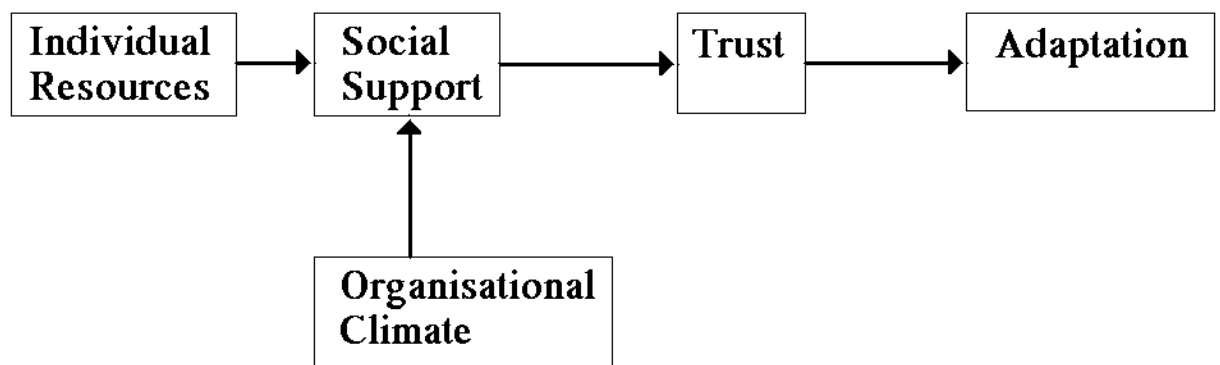
worked in Antarctica. However, it was identified through qualitative response profiles that those expeditioners who returned by plane reported increased importance of peer social support compared to those who returned by ship, although comparison of 95% CI indicated that these differences were not significant. Of potential concern however is that despite increased importance, the perceived availability of peer social support for those who returned by plane was less which they largely attributed to their rapid return and 'disintegration' of the collegial network. Comparison of 95% confidence intervals identified that this theme was reported significantly more than self-development (95% CI: 17.69%-31.95%), and therefore all other positive themes at this time ( $p < .05$  for all comparisons).

In contrast, the negative themes of adjustment difficulties (95% CI: 24.89%-40.36%) and let down (95% CI: 30.96%-47.06%) were reported significantly more than frustration (95% CI: 8.43%-19.94%) and therefore all other negative themes identified at this time ( $p < .05$  for all comparisons). However, overall there were similar numbers of both positive (4) and negative (5) themes identified by single expeditioners at reunion.

As demonstrated in earlier phases of the study there were some interesting parallels between positive and negative response themes provided by single expeditioners at reunion. For example, formal support services (primarily referring to those provided by the AAD) were viewed positively by a proportion of single expeditioners, however others reported reluctance or difficulty engaging with these due to concerns that this information would be recorded on their personnel records and negatively impact future employment opportunities. There were also concerns regarding the physical location of the support services within the AAD. Furthermore, despite excitement experienced at this time there were high levels of both let down and adjustment difficulties reported which reportedly negatively impacted affective experiences.



In order to develop a model articulating the mechanisms underpinning adaptation during the absence period interview transcripts were further analysed to determine links between the ordinate themes of work, relationship, and individual. The resultant model of factors influencing reunion adaptation for single expeditioners is presented in Figure 10.



*Figure 10.* Model depicting factors that influence single expeditioner adaptation during reunion.

*Individual Resources:* Single expeditioners identified that their personal levels of well-being and ratio of positive to negative experiences over the course of the absence period influenced their ability to negotiate the reunion period. Consistent with models of adaptation derived from earlier phases of the employment experience, optimism, self-efficacy, and positive reframing were identified as facilitative of positive adaptation during reunion. Furthermore, single expeditioners who felt they had achieved goals and experienced personal development as a result of the absence experience were more likely to report enhanced individual capacity to negotiate the reunion period. However, single expeditioners who believed that they would not be able to pursue personally meaningful goals outside the Antarctic environment were more likely to experience ‘let-down’ which impeded adaptation during this time.

Table 24

*Qualitative Response Profiles for Single Expeditioners Two Months Post-RTA (Reunion)*

Superordinate Theme	Ordinate Theme	Constituent Theme	Frequency of Endorsement (%)
Positive	Individual	Self-development	24.82
		Excitement	14.18
	Organisational Relationship	Formal support	4.26
		Social support	56.74
Negative	Individual	Let-down	39.01
		Adjustment difficulties	32.62
	Organisational	Access to support	7.09
		Frustration	14.18
	Relationship	Excessive demands	7.09

*Social Support:* Single expeditioners identified the importance of social support, primarily provided by Antarctic colleagues, in negotiating the reunion period. Furthermore, it appeared that social support satisfaction was higher when provided by colleagues as opposed to family and friends due to perceived greater understanding and therefore ability to provide empathy.

*Organisational Climate:* At reunion, perceptions of the organisational climate and their relationship with adaptation were complicated and at times contradictory. Single expeditioners who perceived the organisational climate to be positive and supportive were likely to experience positive adaptation experiences. However, a subset of these individuals also indicate that this at times made it more difficult to disengage from the Antarctic employment experience and resume 'normal' lives (i.e. at times positive organisational climate compounded the 'let-down' experience), as they felt the organisation to be a 'safe' environment and one that was conducive to their self-development. Such individuals were also more likely to access formal support services provided by the AAD, and therefore associated the organisation with social support provision. Single expeditioners who perceived the organisational climate as negative and restrictive were likely to externalise blame for negative absence and reunion experiences to the organisation, and access social support from colleagues rather than formal support services. However, it did not appear that this process negatively impacted on adaptation at this time.

*Trust:* Trust referred to the belief that single expeditioner experiences of Antarctic employment to date would benefit them both personally and professionally in the short and long-term. It also related to the degree of trust they placed in accessing satisfactory social support from either informal (collegial) or formal (AAD) networks.

### *Partnered Expeditioner Qualitative Response Profiles*

The qualitative themes derived from partnered expeditioner interview transcripts at reunion are contained in Table 25. The most commonly reported positive theme identified by partnered expeditioners at reunion was self-development, and although not reported significantly more than social support (primarily from colleagues) and physical contact with partners, it was reported significantly more than changes in the partner characteristics, excitement, and formal support ( $p < .05$  for all comparisons). The most commonly reported negative theme was let down and adjustment difficulties which were reported significantly more than all other negative themes ( $p < .05$  for all comparisons). Of note is that there were more negative (10) than positive (6) themes reported by partnered expeditioners at reunion.

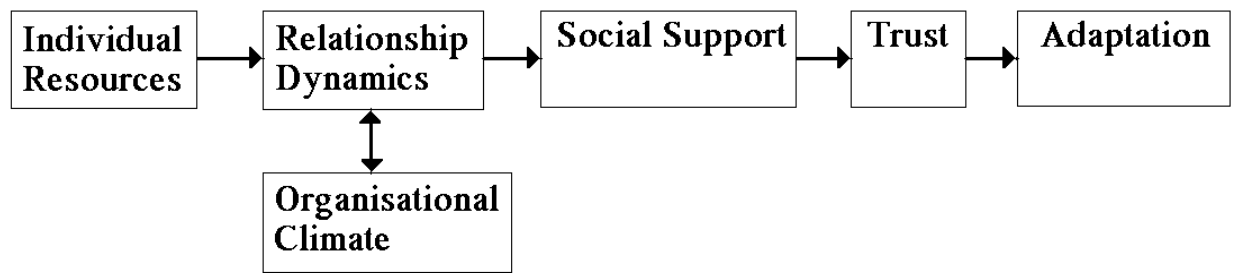
Parallels between positive and negative themes were again evident with excitement in contrast to let-down and adjustment difficulties and similar issues regarding formal support services identified by single expeditioners were identified by partnered expeditioners. Another interesting observation was that changes in partner characteristics (including physical appearance, independence, and confidence) were simultaneously reported as both positive and negative experiences. It is also evident that some relationships were terminated at this time, although the majority of expeditioners did not directly attribute this to their employment experience, but instead to systemic relationship issues.

In order to develop a model articulating the mechanisms underpinning adaptation during the absence period interview transcripts were further analysed to determine links between the ordinate themes of work, relationship, and individual. The resultant model of factors influencing pre-departure adaptation for single and partnered expeditioners is presented in Figure 11.

Table 25

*Qualitative Response Profiles for Partnered Expeditioners at Two Months Post-RTA (Reunion)*

Superordinate Theme	Ordinate Theme	Constituent Theme	Frequency of Endorsement (%)
Positive	Individual	Self-development	30.14
		Excitement	7.09
	Organisational Relationship	Formal support	3.55
		Social support	23.76
		Physical contact	21.28
		Changes in partner	14.18
Negative	Individual	Let down	21.28
		Adjustment Difficulties	15.25
	Organisational	Frustration	6.03
		Gossip	4.26
		Access to support	5.67
	Relationship	Awkwardness	8.87
		Unmet expectations	7.09
		Changes in partner	7.80
		Relationship termination	11.70
		Excessive demands	12.06



*Figure 11.* Model depicting factors that influence partnered expeditioner adaptation during reunion.

*Individual Resources:* Individual resources identified by partnered expeditioners as facilitative of positive adaptation at reunion mirrored the response profiles reported by single expeditioners. Partnered expeditioners identified that their personal levels of well-being and ratio of positive to negative experiences over the course of the absence period influenced their ability to negotiate the reunion period. Consistent with models of adaptation derived from earlier phases of the employment experience, optimism, self-efficacy, and positive reframing were identified as facilitative of positive adaptation during reunion. Furthermore, partnered expeditioners who felt they had achieved goals and experienced personal development as a result of the absence experience were more likely to report enhanced individual capacity to negotiate the reunion period. However, partnered expeditioners who believed that they would not be able to pursue personally meaningful goals outside the Antarctic environment were more likely to experience ‘let-down’ which impeded adaptation during this time.

*Relationship Dynamics:* Broadly speaking, during the reunion period positive relationship dynamics experienced between the expeditioner and partner were facilitative of positive adaptation whilst negative relationship dynamics were facilitative of negative adaptation. All expeditioners reported some level of apprehension about changes in their partner that may have occurred during the absence period and how that may then impact on pre-existing relationship patterns. Relationship dynamics that

enabled the expeditioner to discuss their experiences and continue to access social support from colleagues, as well as gradually reintroduce relationship roles (i.e. increased relationship flexibility) were reported by partnered expeditioners as more facilitative of positive adaptation. In contrast, dynamics which minimised (or in some cases prohibited) discussion of the Antarctic experience, isolated expeditioners from their colleagues, and demanded immediate resumption of relationship roles were reported as negatively impacting the adaptation experience and increasing distress at this time.

*Organisational Climate:* As demonstrated within the single expeditioner category, reunion perceptions of the organisational climate and their relationship with adaptation were complicated and at times contradictory. Partnered expeditioners who perceived the organisational climate to be positive and supportive were likely to experience positive adaptation experiences. These positive perceptions were enhanced when the expeditioner believed that the organisation was an important support resource for their partner during the absence period. However, a subset of these individuals also indicate that this at times made it more difficult to disengage from the Antarctic employment experience and resume 'normal' lives (i.e. at times positive organisational climate compounded the 'let-down' experience), as they felt the organisation to be a 'safe' environment and one that was conducive to their self-development and meeting of their partner's needs which they no longer felt familiar with. Such individuals were also more likely to access formal support services provided by the AAD, and therefore associated the organisation with social support provision.

Partnered expeditioners who perceived the organisational climate as negative, restrictive, or as contributing to relationship breakdown were likely to externalise blame for negative absence and reunion experiences to the organisation, and access social

support from colleagues rather than formal support services. However, it did not appear that this process negatively impacted on adaptation at this time.

*Social Support:* Like single expeditioners, partnered expeditioners identified the importance of social support, primarily provided by Antarctic colleagues, in negotiating the reunion period. Furthermore, it appeared that social support satisfaction was higher when provided by colleagues as opposed to family and friends due to perceived greater understanding and therefore ability to provide empathy. However, a partner who was able to facilitate accessing such support was also perceived as an important social support resource at this time.

*Trust:* Trust referred to the belief that partnered expeditioner experiences of Antarctic employment to date would benefit them both personally and professionally in the short and long-term. It also related to the degree of trust they placed in accessing satisfactory social support from either informal (collegial) or formal (AAD) networks, and that their intimate relationship would not be permanently affected in a negative way as a result of the experience.

#### *Partner Qualitative Response Profiles*

Qualitative themes derived from partner interview transcripts at reunion are contained in Table 26. The most positive experience reported by partners at reunion was physical contact with the expeditioner, although comparisons of 95% confidence intervals identified that there was no significant differentiation between this and reports of excitement, relief, self-development, provision of formal support services, or changes in the expeditioner ( $p > .05$  for all comparisons).

The most negative experience reported by partners at reunion was unmet expectations (95% CI: 25.34%-40.43%) which was reported significantly more than frustration (95% CI: 16.68%-30.30%), and therefore all other negative response themes



( $p < .05$  for all comparisons). Overall, a similar number of positive (6) and negative (5) themes were identified.

Changes in expeditioner characteristics (including physical appearance, interactional styles, and interests) were simultaneously reported as both positive and negative during the reunion period. Furthermore, despite the relatively high endorsement of excitement there were also high levels of frustration reported by partners at this time (Table 26). Interestingly also is that a source of frustration reported by partners was that the expeditioner felt they had returned to 'normal' whilst the partner disagreed. It was also apparent that partners who experienced relationship termination subsequent to Antarctic employment largely attributed this to the employment experience and either blamed or harboured resentment towards the AAD for this.

In order to develop a model articulating the mechanisms underpinning adaptation during the absence period interview transcripts were further analysed to determine links between the ordinate themes of work, relationship, and individual. The resultant model of factors influencing pre-departure adaptation for partners is presented in Figure 12.

Table 26

*Qualitative Response Profiles for Partners Two Months Post-RTA (Reunion)*

Superordinate Theme	Ordinate Theme	Constituent Theme	Frequency of Endorsement (%)
Positive	Individual	Excitement	20.13
		Self-development	16.78
		Relief	18.12
	Organisational Relationship	Formal support	13.42
		Physical contact	21.48
		Changes in expeditioner	10.07
Negative	Individual	Change in routine	10.07
		Blaming	20.13
	Organisational Relationship	Unmet expectations	32.89
		Frustration	16.78
		Changes in expeditioner	13.42
		Relationship termination	6.71

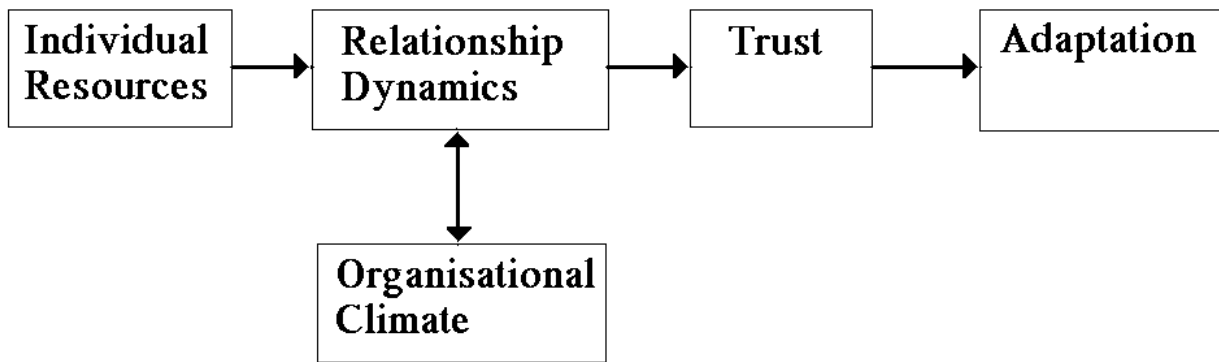


Figure 12. Model depicting factors that influence partner adaptation during reunion.

*Individual Resources:* As was demonstrated within the expeditioner sample, individual resources primarily related to partner's pre-existing psychological attributes and whether these facilitated positive or negative experiences. Individual resources that facilitated positive experiences included responses reflecting future-oriented optimism, positive reframing, and self-efficacy.

*Relationship Dynamics:* Partner excitement regarding the expeditioner's return often appeared to result in high expectations of reunion dynamics, particularly for those who had not previously experienced an Antarctic employment. As a result, partners were often sensitive to perceived rejection from the expeditioner. For example, if partners perceived that the expeditioner's desire to spend time with colleagues related to a deficit in the relationship (e.g. they are not interested in me), this negatively impacted adaptation at this time. However, if partners rationalised this behaviour as normal and important for the expeditioner's adaptation they were more likely to experience positive adaptation.

*Organisational Climate:* Partners who perceived the organisational climate to be facilitative of both their own adaptation as well as the adaptation of the expeditioner felt that this directly influenced their own approach to relationship dynamics during this time. In contrast, those who believed the organisational climate to have either undermined

relationship dynamics or engendered relationship termination were likely to report degradations in relationship dynamics.

*Trust:* Trust referred to the degree to which partners were confident in their own ability and the ability of the expeditioner to successfully negotiate this and future stages of the Antarctic employment experience. However, it also referred to the trust that their relationship would continue following the Antarctic employment experience.

### *Comparing Single Expeditioner, Partnered Expeditioner and Partner Qualitative Response Profiles*

Comparison of qualitative response profiles (see Tables 24 through 26) at reunion identified that whilst all participant categories reported both positive and negative experiences at reunion, partnered expeditioners reported more negative than positive themes whilst single expeditioners and partners reported relatively equal numbers of positive and negative themes. Furthermore, it appears that the amount of overlap between single and partnered expeditioner response profiles is lower than that demonstrated in earlier phases of the Antarctic employment experience (see Tables 24 & 25). However, there appeared to be some consistency in experiences across participant categories in regards to the experience of self-development, excitement, and frustration. Another consistency appears to be negative perceptions of the organisation with difficulties being attributed to organisational structure and processes whilst at the same time the availability of formal support services from the AAD was seen to be a positive aspect of the reunion period.

Another issue is that although comparison of 95% CI identified that there were no significant differences in the qualitative response profiles between expeditioners who had returned by plane and those who had returned by ship, there was a perception in these groups that there were differences in the reunion experience as a function of transportation method.

Regardless of RTA transport experience, expeditioners agreed that the reunion experience was more challenging if returning by plane. The primary reasons provided for this were that compared to air-based transportation, RTA by ship allowed more time (days versus hours) to psychologically prepare for re-entry into routine life and integration of experiences into a coherent, consistent personal identity. Furthermore, it allowed gradual exposure to larger numbers of unfamiliar people as each station resupply occurred, as well as time to recover from the intensity of the resupply period. Some expeditioners also commented that ship based RTA allowed for gradual physiological acclimatisation to occur, which was not afforded by air-based personnel transportation methods.

#### 8.4 Discussion

This phase of the study investigated single expeditioner, partnered expeditioner, and partner functioning two months post-RTA to determine the level of positive change, negative change, and adaptation that has occurred following the Antarctic employment experience. It was hypothesised that: *H1*) Both single and partnered expeditioners would report significantly higher levels of life satisfaction and well-being compared to partners, and that single expeditioners would report significantly higher levels of life satisfaction and well-being compared to partnered expeditioners; *H2*) Single and partnered expeditioners who return by plane will report significantly lower levels of well-being compared to those who return by ship, and that this difference will be mirrored in partner response profiles; *H3*) All participant categories would report significantly higher negative change scores compared to positive change scores at reunion; and *H4*) Changes in outlook reported at reunion will be predicted by a combination of individual, relationship, and work-related factors during pre-departure, absence and reunion periods.

### *Well-Being and Quality of Life Satisfaction at Reunion*

The hypothesis predicting that both single and partnered expeditioners would report significantly higher levels of life satisfaction and well-being compared to partners was supported only in regards to environmental satisfaction and somatic distress scores. However, partners reported significantly lower levels of performance difficulties, general feelings of distress, and total distress scores compared to both single and partnered expeditioners. Furthermore, not only was the hypothesis predicting that single expeditioners would report significantly higher levels of satisfaction and well-being compared to partnered expeditioners not supported, results demonstrate that expeditioners and partners report significantly higher functioning in most life satisfaction and well-being domains compared with norms even when significant decrements were evident from pre-departure functioning.

This finding is consistent with research demonstrating that challenges inherent within the reunion period do not significantly impact the well-being of returnees at this time (Blount & Curry, 1992; Kelley, 1994; Rabb, Baumer, & Wiesler, 1993). Furthermore, it appears that this observation also extends to the partners of returnees who demonstrated superior functioning than both single and partnered expeditioners in multiple domains of well-being. Taken together, these results provide further evidence for an argument of self-selection within Antarctic populations (Musson, Sandal, Harper, & Helmreich, 2002).

The hypothesis predicting that single and partnered expeditioners who return by plane would experience significantly lower well-being compared to those who return by ship was not supported by quantitative data, however the nature of qualitative response profiles suggested that there were aspects of the reunion process that were more challenging due to the contracted return period. These largely related to a contracted period in which to psychologically prepare for re-entry into routine life and integration of experiences into a coherent, consistent personal identity, become accustomed to interacting with larger numbers

of unfamiliar people, recover from the intensity of the resupply period, and for physical acclimatisation to occur. However, the absence of quantitative differences at reunion suggests that these are either largely resolved by two months post-RTA, or were not adequately assessed by the variables under study.

Within military operations it is not unusual for returnees to remain on base for a period of time after return to facilitate this cognitive restructuring process described by expeditioners. It also provides for formal debriefings to occur. However, evidence regarding the efficacy of these procedures has been equivocal with some authors finding that difficulties are often compounded by having returned, but not to the home environment, particularly for partnered individuals and partners (Dunt, 2009).

#### *Qualitative Response Profiles at Reunion*

Furthermore, the nature of qualitative responses provided by all participant categories suggests that this process of cognitive restructuring to accommodate new (and at times competing and conflicting) information continues throughout the reunion period. The evidence for this is the relatively equal numbers of both positive and negative themes, as well as the parallels between positive and negative items. Similarly, the frustration reported by all participant categories may be related to experiences of cognitive dissonance that are not easily remediated, particularly when trying to achieve this at both the individual and relationship level. Potentially compounding difficulties in renegotiating the relationship schema is the degree of mind-reading that appears to be occurring between partnered expeditioners and partners whereby members behave on the basis of perceived needs rather than communicating these directly. Considering the amount of time that has elapsed in which the relationship unit has been separated and the changes that have taken place in both members, it is unlikely that these perceptions would be accurate particularly considering

evidence that misunderstanding regarding intimacy, emotional issues, and experiences are common during reunion (Clarke et al., 1985).

The hypothesis predicting that all participant categories would report significantly higher negative change compared to positive change scores at reunion was partially supported. Partners reported significantly higher negative compared to positive change scores, however the inverse was true for both single and partnered expeditioners. Furthermore, partners reported significantly higher negative change scores compared to both single and partnered expeditioner categories. Reasons for this may relate to a perceived lack of acknowledgement regarding the challenges negotiated in the expeditioner's absence, as well as perceived competition from new friendships developed by the expeditioner whilst working in Antarctica.

Qualitative response profiles also indicate that partners report a high level of unmet expectations during the reunion period and that these largely relate to the nature of interactions with the expeditioner during this time (e.g. resumption of routines, interdependence on one another for social support) and may indicate that a degree of idealisation regarding the reunion process had occurred. It has been demonstrated that the level of idealisation regarding relationship dynamics increases as the level of face-to-face communication decreases, and that the longer the separation the greater the degree of idealisation that is likely to occur (Stafford & Merolla, 2007). In turn greater levels of idealisation have been associated with greater levels of relationship instability upon reunion (Stafford & Merolla, 2007). Thus it appears that the cognitive constructions of reunion experiences differ greatly between partnered expeditioners and partners and at times are in conflict with one another, and that this may result from idealisation in one or both members of the relationship unit.



Furthermore, cognitive constructions between single and partnered expeditioners appear to diverge at reunion as a result of different challenges that need to be negotiated during the reunion period (Figures 10, 11, and 12). Thus the importance of communication with fellow expeditioners undergoing similar experiences during reunion may reflect a need for additional social support at this time to assist in this process of integrating a coherent identity. Previous research has demonstrated that social support networks can facilitate the reestablishment of identity by providing congruent or self-confirmatory feedback (Swann, 1983, 1987). More broadly, this process is consistent with social comparison theory which posits that individuals look to similar others as a means of understanding and integrating attitudes and experiences (Festinger, 1954).

This finding may also relate to Taylor's (1973) observation following Antarctic employment expeditioners were reluctant to disengage from the collegial network and re-engage with routine environments. Problematically, it appears that partnered expeditioners may not always be able to access this support resource due to partner reluctance for this to occur. Considering that most expeditioners identified a reluctance to engage with formal support services, limited access to informal social support such as that provided by Antarctic colleagues may result in more negative affective states as demonstrated by van Breda (1997) and Rosen and Moghadam (1988). In turn, this may negatively impact on the cognitive restructuring process in a similar manner to that observed in depressive disorders whereby decrements in attention, concentration, and abstract thought are demonstrated (Beck, 2002).

#### *Predicting Positive and Negative Changes in Outlook at Reunion*

The hypothesis predicting that changes in outlook reported at reunion would be predicted by a combination of individual, relationship, and work related factors at both pre-departure and during the absence period was partially supported. Changes in outlook reported

by single expeditioners were predicted by a combination of individual and relationship level factors during the pre-departure, absence, and reunion periods. Changes in outlook reported by partnered expeditioners were predicted by a combination of individual and organisational factors at both pre-departure and during the absence period. Changes in outlook reported by partners were predicted by a combination of relationship and individual level factors during the pre-departure, absence, and reunion period. These results further demonstrate the multidimensional nature of Antarctic employment experiences, and is consistent with other models of vocational absences demonstrating interrelationships between inter and intra-individual factors as well as different phases of employment in determining adaptation outcomes (Busuttil & Busuttil, 2001).

### *Implications*

Within Antarctic populations it appears that the primary task of the reunion period is psychological adjustment to the routine environment to begin a process of cognitive restructuring to integrate Antarctic and non-Antarctic experiences. Social support from colleagues appears particularly important in this process as the shared experiences appear to result in shared schemas facilitating better understanding of support needs and how to best meet these. However, there are two issues to consider in the nature and availability of this collegial support.

Firstly, continued reliance on colleagues as opposed to intimate partners may inhibit adaptation back into the relationship unit and undermine positive relationship experiences if it is misunderstood by the partner and interpreted as rejection. Secondly, the availability of this support appears to be less when experiencing rapid returns from Antarctica via air transportation which may prolong the adaptation process. Addressing these issues through provision of education in earlier stages of the employment experience allows for preparation

and different cognitive interpretations (due to increased likelihood of shared schemas) to be made, thereby facilitating more positive adaptation. This suggestion is further reinforced by results indicating that positive and negative change at reunion was determined by experiences during pre-departure, absence, and reunion at the individual, organisational, and relationship level emphasising the opportunity to implement proactive prevention and intervention programs.

In summary, results of the current study again reinforce the interdependent nature of experiences occurring throughout the absence period at individual, organisational, and relationship levels. The continued interaction between these factors both within and between different phases of the Antarctic employment experience further reinforces the argument made here that comprehensive understanding of this phenomena can only be determined through adopting longitudinal designs that accommodate the identification of not only positive and negative outcomes, but also the mechanisms which underpin these. Thus in order to determine the mechanisms underlying adaptation between reunion and reintegration, the final study examined the difference in functioning between two months post-RTA (reunion) and 12 months post-RTA (reintegration).

## CHAPTER NINE

### THE REINTEGRATION PERIOD

## 9.1 Reintegration

In contrast to the reunion period, the reintegration period is a more complex phenomenon which involves physical and psychological adaptation (as opposed to adjustment) to the physical and social environment, and for this reason some authors have argued the most challenging aspect of vocational absences (USUHS, 2004). Primary tasks that need to be achieved in order for successful reintegration to occur involve accommodation of the returning member into pre-existing family and friendship networks that have continued to function (and in most cases evolve) during the absence period, and in some cases rebuilding of these relationships in acknowledgement of the changes that have occurred (Dirkzwager, Bramsen, Ader, van der Ploeg, 2005).

Estimates regarding the onset of the reintegration period vary from one-three months post-return, and can continue for up to one year or more, dependent on the circumstances and experiences associated with the absence period (Logan, 1987; USUHS). Although there are discrepancies in the theorised temporal onset and duration of this period (which appear to stem from confounding reunion and reintegration definitions and experiences), most estimates indicate that the reintegration period begins approximately two-three months post-return, and can continue for up to one year or more, dependent on the circumstances and experiences associated with the absence period (Logan, 1987; USUHS).

Researchers examining adaptation and reintegration experiences in other populations (e.g., military and expatriate managers) have demonstrated a pattern of functioning characterised by heightened levels of negative symptoms in the early stages immediately following the challenging event and gradual regression to pre-departure levels of functioning over time (Brickman & Campbell, 1971; Brickman, Coates, & Janoff-Bulman, 1978; Headey & Wearing, 1989; Lucas, Clark, Georgellis & Diener, 2003). Results demonstrating an improvement in functioning following a challenging

event (such as reunion), yet no significant difference from pre-existing function are consistent with the theory of resilience in which resilience refers to a return to baseline, or homeostasis, following exposure to a challenging event whilst results demonstrating an improvement beyond original levels of functioning demonstrate growth or salutogenic outcomes (Antonovsky, 1987; Linley & Joseph, 2004; O'Leary & Ickovics, 1995; Selye, 1974; Tedeschi & Calhoun, 1995; Tedeschi, Park, & Calhoun, 1998). In contrast, decrements in scores from baseline suggest a lack of positive or effective adaptation to the challenging situation (O'Leary & Ickovics).

Following return from Antarctic absences a large proportion of expeditioners highlight the positive aspects of their employment experience (Cravalho, 1996). Researchers investigating expeditioner functioning post-return have identified numerous positive outcomes engendered by Antarctic employment including increased self-reliance (Taylor, 1974), self-satisfaction (Cravalho, 1996), tolerance towards others, personal insight, achievement motivation, and self-efficacy (Suedfeld, 2002), and decreased long-term risk of hospital admissions compared to military personnel without Antarctic experience (Palinkas, 1986). From these results it would appear that Antarctic employment engenders enhanced subjective well-being at reintegration.

However results described by Taylor and McCormick in relation to their study investigating post-return experiences of expeditioners and partners demonstrated a combination of both positive and negative affective experiences associated with the expeditioner's return when assessed 16 months later (Taylor & McCormick, 1987). Similarly, Popkin, Stillner, Hall, and Pierce (1978) found that negative symptoms including disturbed sleep patterns, declines in cognitive functioning, indecisiveness, emotional withdrawal, and communication difficulties continued to be experienced by some expeditioners for up to one year following their return and based on this advocated further longitudinal assessment of reintegration processes in order to

maximise positive outcomes. Taken collectively, these results suggest that Antarctic employment can engender both positive and negative changes in outlook that occur as a function of the cognitive construction of meaning associated with the experience.

Cognitive processing of information and experiences associated with challenging events can facilitate positive and negative outcomes, with affective state being positively correlated with outcome valence (Calhoun & Tedeschi, 1998; Janoff-Bulman, 1992). Additionally, perceived benefit at the time of the challenging event has also been correlated with positive change, and inversely correlated with negative change (Abraido-Lanza et al., 1998). Considering that in the previous phase of this study single expeditioners, partnered expeditioners, and partners all reported some perceived benefit of the Antarctic employment experience (as evidenced by positive change scores) it is arguable that this will facilitate further positive change to occur during the reintegration period, and less negative change. Furthermore, the longer the period of time elapsed since the challenging event, the greater the degree of growth expected (Cordova et al., 2001; Evers et al., 2001; Park et al., 1996; Polatinsky & Esprey, 2000).

Thus the aim of the current phase of the study was to investigate single expeditioner, partnered expeditioner, and partner functioning 12 months post-RTA to determine the level of positive change, negative change, and adaptation that had occurred following the Antarctic employment experience. It was hypothesised that:

*H1.* Mean quality of life and well-being scores would be significantly higher than those reported at reunion, as well as those reported at pre-departure for all participant categories.

*H2.* At reintegration, mean positive change scores would be significantly higher than mean negative change scores for all participant categories. Furthermore, it was hypothesised that mean negative change scores will be significantly lower than those reported at reunion.

*H3.* Positive and negative change scores reported by all participant categories at reintegration would be predicted by a combination of individual, organisational, and relationship level factors. Furthermore, the positive and negative change scores reported by all participant categories at reintegration would be predicted by measures taken across the employment experience from pre-departure, absence, and reunion.

## 9.2 Method

### *Participants*

The same expeditioners and partners participated in all phases of the research project. Participant characteristics are detailed on pages 58 and 88 of the thesis.

### *Materials*

The same measures administered at reunion were implemented to collect data from participants at reintegration.

### *Procedure*

Twelve-months post return to Australia (RTA) the previously listed questionnaires were distributed to consenting participants. The items contained in the questionnaires completed by partners were identical to those completed by expeditioners. Expeditioner and partner questionnaires were mailed and returned separately. Additionally, participants were asked to indicate whether they would be willing to participate in an interview based on their experiences at this time. Participants who consented to interviews were then contacted by phone or met the researcher at a mutually convenient location to undertake the semi-structured interview.

## 9.3 Results

### *Analysis Strategies*



Preliminary analyses examined between and within group differences on measures of quality of life satisfaction (as measured by the WHOQOL-BREF), well-being (as measured by the HSCL-21), and positive and negative change (as measured by the CiOQ). These analyses identified that there were no significant differences on these measures as a function of absence length or RTA transportation method (see Appendix J), and thus data has been collapsed across these categories for the preliminary analyses. Additionally, quality of life satisfaction and well-being scores were compared with those recorded at pre-departure and reunion. Following this, a series of step-wise regression analyses were performed to determine which factors predicted positive and negative change two months post-RTA.

### *Quality of Life Satisfaction*

Means and standard deviations for each of the quality of life satisfaction indices measured by the WHOQOL-BREF are reported in Table 27.

#### *Between Group Differences*

At reintegration, single and partnered expeditioners reported significantly lower levels of physical health satisfaction compared to partners and norms ( $p < .001$  for all comparisons), with partner scores also significantly lower than norms,  $t(148) = -6.88$ ,  $p < .001$ . In contrast, psychological health satisfaction scores were significantly higher within both expeditioner categories compared to partners and norms ( $p < .01$  for all comparisons). Single expeditioners reported significantly higher levels of relationship satisfaction than partnered expeditioners, partners, and norms ( $p < .001$  for all comparisons). In regards to environmental satisfaction, both single and partnered expeditioners reported significantly higher scores compared to partners and norms ( $p < .001$  for all comparisons), whilst partners reported significantly higher scores than norms  $t(148) = 5.39$ ,  $p < .001$ .

### *Within Group differences*

In order to test the first hypothesis that mean quality of life satisfaction scores would be significantly higher than those reported at reunion as well as those reported at pre-departure for all participant categories, a series of repeated measures ANOVAs were performed.

#### Single Expeditioners

A 4[age: 20-29, 30-39, 40-49, 50+] x 4(absence length: 3-6, 7-10, 11-14, 15-18) univariate ANOVA determined a significant age by absence length interaction for single expeditioner psychological health satisfaction scores. Post-hoc analyses identified that single expeditioners aged 20-29 years of age who experienced an absence of seven-10 months reported significantly lower scores than those aged 30-39 years who experienced an absence of 15-18 months. However, there were no significant differences in psychological health satisfaction scores reported by single expeditioners when comparing pre-departure, reunion, or reintegration assessments.

A series of repeated measures ANOVAs identified a significant effect of time of assessment on the other WHOQOL-BREF domains. Relationship satisfaction scores differed significantly as a function of time,  $F(2,278)=3.07, p<.05$  ( $\eta^2=.02$ ) with reintegration scores being significantly higher than those recorded at both pre-departure and reunion ( $p<.01$  for all comparisons). Similarly, environmental satisfaction scores differed significantly as a function of time,  $F(2,278)=8.34, p<.001$  ( $\eta^2=.06$ ) with reintegration scores significantly higher than those recorded at both pre-departure and reunion ( $p<.001$  for all comparisons). Physical health satisfaction scores reported by single expeditioners also varied significantly over time,  $F(2, 278)= 20.69, p<.001$  ( $\eta^2=.13$ ) however post-hoc analyses identified that reintegration scores were significantly lower than those recorded at both pre-departure and reunion ( $p<.001$  for all comparisons).

### Partnered Expeditioners

A 2[sex: male, female] x 4(age: 20-29, 30-39, 40-49, 50+) univariate ANOVA identified a significant age by sex interaction for partnered expeditioners on psychological health satisfaction,  $F(3, 240)=3.49, p<.05$  ( $\eta^2=.04$ ). Post-hoc analyses identified that female partnered expeditioners aged 40-49 years reported significantly higher levels of satisfaction than all other partnered expeditioners.

When examining responses over time, a repeated measures ANOVA identified a significant effect of time on measures of environmental satisfaction,  $F(2, 564)=6.42, p<.01$  ( $\eta^2=.02$ ), with significantly higher scores recorded at reintegration compared to pre-departure ( $p<.01$ ). Physical health satisfaction scores also varied as a function of time,  $F(2, 564)=42.29, p<.001$  ( $\eta^2=.15$ ), with post-hoc analyses identifying that reintegration scores were significantly lower than those recorded at both pre-departure and reunion ( $p<.01$  for all comparisons).

### Partners

Within the partner sample there was a significant main effect of age on physical health satisfaction reintegration scores,  $F(3, 117)=2.76, p<.05$  ( $\eta^2=.07$ ). Post-hoc analyses identified that partners aged 20-29 years reported significantly higher scores than all other age categories, and 40-49 year olds reporting significantly lower scores than all other age categories ( $p<.01$  for all comparisons). A repeated measures ANOVA identified a significant effect of time on physical health scores reported by partners,  $F(2, 296)=4.71, p<.01$  ( $\eta^2=.03$ ) such that pre-departure scores were significantly higher than reintegration scores, which were significantly higher than reunion scores ( $p<.01$  for all comparisons).

A repeated measures ANOVA also identified a significant effect of time on environmental satisfaction reported by partners,  $F(2, 296)=19.86, p<.001$  ( $\eta^2=.12$ ), with post-hoc analyses identifying that reintegration scores were significantly higher

than pre-departure scores which were significantly higher than reunion scores ( $p < .001$  for all comparisons).

### *Well-Being*

Means and standard deviations of well-being scores as measured by the HSCL-21 for each participant category are reported in Table 28.

#### *Between Group Differences*

Although single and partnered expeditioners reported significantly higher levels of somatic distress compared to partners at reunion, their scores were significantly lower than those reported for norms ( $p < .001$  for all comparisons). The same pattern of results was demonstrated for total distress scores ( $p < .001$  for all comparisons). Similarly, expeditioners reported significantly higher levels of performance difficulties than partners ( $p < .01$ ), however scores were on par with norms reported by Dean et al. (1992). In regards to general feelings of distress, partnered expeditioners reported significantly lower scores than single expeditioners, partners, and norms ( $p < .01$  for all comparisons) who reported significantly lower scores than norms ( $p < .001$  for all comparisons).

#### *Within Group Differences*

In order to test the hypothesis that mean well-being scores would be significantly higher than those reported at reunion as well as those reported at pre-departure for all participant categories, a series of repeated measures ANOVAs were performed.

Table 27

*Comparing Quality of Life Domain Satisfaction for Single Expeditioners, Partnered Expeditioners, and Partners at Reintegration*

	Single		Partnered		Partners		Norms	
WHOQOL-BREF	Expeditioners		Expeditioners					
Domain	M	SD	M	SD	M	SD	M	SD
Physical	65.74 <sup>a</sup>	6.01	65.33 <sup>a</sup>	6.35	72.68 <sup>b</sup>	13.00	80.00 <sup>c</sup>	17.10
Psychological	74.73 <sup>d</sup>	9.19	74.10 <sup>d</sup>	10.21	71.48 <sup>b</sup>	12.77	72.60 <sup>b</sup>	14.20
Relationship	76.01 <sup>e</sup>	20.84	72.82 <sup>b</sup>	21.10	72.04 <sup>b</sup>	16.10	72.20 <sup>b</sup>	18.50
Environment	86.32 <sup>f</sup>	11.17	84.31 <sup>f</sup>	11.48	80.20 <sup>c</sup>	12.24	74.80 <sup>d</sup>	13.70

*Note:* Means not sharing the same subscript are significantly different

### Single Expeditioners

A 4(age: 20-29, 30-39, 40-49, 50+) x 4(absence length: 3-6, 7-10, 11-14, 15+) univariate analysis of variance identified a significant interaction on single expeditioner somatic distress scores,  $F(4, 103)=4.22, p<.01$  ( $\eta^2=.14$ ). Post-hoc analyses identified that single expeditioners aged 30-39 years who experienced an absence of three-six months reported significantly lower scores than all other single expeditioners ( $p<.01$  for all comparisons). In contrast, single expeditioners aged 30-39 years who experienced an absence of 15-18 months reported significantly higher scores than all other single expeditioners ( $p<.001$  for all comparisons). Similarly, an age by absence length interaction was also evident for performance difficulty scores,  $F(4, 103)=2.78, p<.05$  ( $\eta^2=.03$ ). Post-hoc analyses identified that single expeditioners aged 30-39 years experiencing an absence of 15-18 months reported significantly higher levels of performance difficulties.

Comparisons of single expeditioner well-being scores over time identified significant differences between pre-departure, reunion, and reintegration scores. A repeated measures ANOVA identified that somatic distress scores reported by single expeditioners at reintegration differed significantly over time,  $F(2, 278)=20.78, p<.001$  ( $\eta^2=.13$ ). Post-hoc analyses identified that reintegration scores were significantly lower than those reported at reunion ( $p<.01$ ), although they did not differ from pre-departure. Similarly, performance difficulty scores differed significantly over time,  $F(2, 278)=25.00, p<.001$  ( $\eta^2=.15$ ) with reintegration scores being significantly lower than reunion scores ( $p<.001$ ). Total distress scores also differed significantly as a function of time,  $F(2, 278)=12.73, p<.001$  ( $\eta^2=.08$ ) with post-hoc analyses identifying reintegration scores as significantly lower than those reported at reunion ( $p<.001$ ).

### Partnered Expeditioners

A univariate ANOVA identified a significant main effect of age on partnered expeditioner general feelings of distress at reintegration,  $F(3, 240)=5.06, p<.01$  ( $\eta^2=.06$ ). Post-hoc analyses identified that partnered expeditioners aged 20-29 years reported significantly higher levels of distress than all other age categories ( $p<.01$  for all comparisons).

A repeated measures ANOVA identified that somatic distress scores reported by partnered expeditioners varied significantly as a function of time of measurement,  $F(2, 564)=43.65, p<.001$  ( $\eta^2=.14$ ). Post-hoc analyses identified that reintegration scores were significantly lower than reunion scores ( $p<.001$ ). The same pattern of results was also evident for performance difficulty scores,  $F(2, 564)=36.65, p<.001$  ( $\eta^2=.12$ ), with reintegration scores significantly lower than reunion scores ( $p<.001$ ). General feelings of distress scores also followed this pattern,  $F(2, 564)=21.26, p<.001$  ( $\eta^2=.07$ ), with significantly lower scores at reintegration compared to reunion. However, there were no differences between pre-departure and reintegration scores for partnered expeditioners on any of the HSCL-21 subscales.

#### Partners

A univariate ANOVA identified a significant main effect of sex on partners scores of performance difficulties at reintegration,  $F(1, 117)=6.94, p<.01$  ( $\eta^2=.06$ ), with female partners reporting significantly higher levels of distress compared to male partners at this time. Additionally a repeated measures ANOVA identified a significant effect of time of measurement on performance difficulty scores,  $F(2, 296)=35.23, p<.001$  ( $\eta^2=.19$ ). Post-hoc analyses identified that reintegration scores were significantly lower than those recorded at both pre-departure and reunion ( $p<.01$  for all comparisons).

When assessing changes in scores over time, it was further identified that all other HSCL-21 subscales demonstrated differences as a function of time. A repeated

measures ANOVA identified that this was the case for general feelings of distress,  $F(2, 296)=35.44, p<.001 (\eta^2=.19)$ , total distress,  $F(2, 296)=70.88, p<.001 (\eta^2=.29)$ , and somatic distress,  $F(2, 296)=58.79, p<.001 (\eta^2=.28)$ . In each case reintegration scores were significantly lower than pre-departure scores, with GFD and SD scores also being significantly lower than those reported at reunion.

### *Changes in Outlook*

Means and standard deviations for positive and negative change as measured by the CiOQ at reintegration are presented in Table 29. In order to test the second hypothesis predicting that mean positive change scores would be significantly higher than mean negative change scores for all participant categories a series of univariate ANOVAs were conducted. Additionally, to assess the second component of this hypothesis predicting that mean negative change scores would be significantly lower than those reported at reunion by all participant categories, a series of repeated-measures ANOVAs were conducted.

### *Between Group Differences*

A univariate ANOVA identified that both single and partnered expeditioners reported significantly higher levels of positive change at reintegration compared to partners ( $p<.001$  for all comparisons). In contrast, partners reported significantly higher levels of negative change at reintegration compared to both expeditioner categories ( $p<.05$  for all comparisons). However, there were no differences as a function of transportation method at this time.



Table 28

*Comparing Well-Being Between Single Expeditioners, Partnered Expeditioners, and Partners at Reintegration*

	Single		Partnered		Partners		Norms	
	Expeditioners		Expeditioners					
Domain	M	SD	M	SD	M	SD	M	SD
Somatic Distress	8.63 <sup>a</sup>	2.65	8.87 <sup>a</sup>	2.93	7.99 <sup>b</sup>	3.36	9.13 <sup>c</sup>	2.52
Performance Difficulties	10.69 <sup>d</sup>	3.80	10.74 <sup>d</sup>	3.93	9.25 <sup>c</sup>	3.44	11.09 <sup>d</sup>	.32
General Feelings of Distress	11.15 <sup>d</sup>	13.92	9.70 <sup>c</sup>	7.38	10.49 <sup>d</sup>	3.72	15.37 <sup>e</sup>	5.76
Total Score	30.85 <sup>f</sup>	15.95	29.17 <sup>f</sup>	10.80	27.73 <sup>g</sup>	8.41	35.58 <sup>h</sup>	8.52

*Note:* Means not sharing the same subscript are significantly different

### *Within Group Differences*

#### Single Expeditioners

There were no differences in single expeditioner positive change scores at reintegration as a function of demographics. However, a repeated measures ANOVA identified that single expeditioner positive change scores were significantly higher at reintegration compared to reunion,  $F(1, 139)=26.91, p<.001$  ( $\eta^2=.16$ ). In contrast, negative change scores were significantly lower at reintegration compared to reunion,  $F(1, 139)=15.84, p<.001$  ( $\eta^2=.10$ ). Furthermore, a paired-samples t-test identified that single expeditioner positive change scores reported at reintegration were significantly higher than negative change scores,  $t(139)=16.05, p<.001$ .

#### Partnered Expeditioners

A 4(age: 20-29, 30-39, 40-49, 50+) x 4(absence length: 3-6, 7-10, 11-14, 15-18) univariate ANOVA identified a significant age by absence length interaction on positive change scores reported by partnered expeditioners,  $F(5, 240)=2.49, p<.05$  ( $\eta^2=.05$ ). Post-hoc analyses revealed that partnered expeditioners aged 40-49 years who experienced an absence of 15-18 months reported significantly higher levels of positive change than all other partnered expeditioners, whilst those aged 50+ years that experienced an absence of 11-14 and 15-18 months scored significantly lower levels of positive change than all other partnered expeditioners. Furthermore, there was a significant main effect of sex on negative changes scores,  $F(1, 240)=4.73, p<.05$  ( $\eta^2=.02$ ) with males reporting significantly higher negative change scores than female partnered expeditioners.

Table 29

*Changes in Outlook at Reintegration for Single Expeditioners, Partnered Expeditioners, and Partners*

	Single		Partnered		Partners	
	Expeditioners		Expeditioners			
Domain	M	SD	M	SD	M	D
Positive Change	40.49 <sup>a</sup>	6.49	40.46 <sup>a</sup>	6.72	34.87 <sup>b</sup>	8.33
Negative Change	24.71 <sup>c</sup>	9.88	24.75 <sup>c</sup>	9.68	27.91 <sup>d</sup>	8.55

*Note:* Means not sharing the same subscript are significantly different

A repeated-measures ANOVA identified that partnered expeditioner negative change scores were significantly lower at reintegration compared to reunion  $F(1, 282)=25.23, p<.001$  ( $\eta^2=.08$ ), whilst positive change scores were significantly higher at reintegration compared to reunion,  $F(1, 282)=44.13, p<.001$  ( $\eta^2=.14$ ). Furthermore, a paired-samples t-test identified that positive change scores reported by partnered expeditioners at reintegration were significantly higher than negative change scores,  $t(282)=21.75, p<.001$ .

### Partners

A 4(age: 20-29, 30-39, 40-49, 50+) x 2(experience: yes, no) univariate ANOVA identified a significant age by experience interaction for positive change scores reported by partners at reintegration,  $F(3, 117)=3.63, p<.05$  ( $\eta^2=.09$ ). Post-hoc analyses identified that partners aged 20-29 years with previous experience of Antarctic employment reported significantly lower scores than all other partners. A repeated-measures ANOVA identified that negative change scores reported by partners at reintegration were significantly lower than those reported at reunion,  $F(1, 148)=20.86, p<.001$  ( $\eta^2=.12$ ), whilst positive change scores were significantly higher at reintegration compared to reunion,  $F(1, 148)=36.35, p<.001$  ( $\eta^2=.20$ ). Furthermore, a paired-samples t-test identified that positive change scores reported by partners at reintegration were significantly higher than negative change scores,  $t(148)=7.53, p<.001$ .

### *Predicting Positive and Negative Change*

In order to test the third hypothesis predicting that positive and negative change scores reported by all participant categories at reintegration would be predicted by a combination of individual, organisational, and relationship level factors across the employment experience a series of backwards stepwise regression equations were

performed (Appendix K). A series of bivariate correlations identified that positive and negative change scores obtained on the CiOQ were significantly correlated with all quality of life satisfaction and well-being domains for each participant category.

Consistent with reunion data, these scores were not significantly correlated with absence length categories nor did positive and negative change scores differ as a function of absence length. For this reason separate step-wise regression equations were performed for each participant category, but absence categories were collapsed within these. Comparison of  $R^2$  identified that the equations in which participant categories were further separated according to absence length category identified no significant improvements over those in which absence length was not differentiated. Furthermore, the highly significant correlations between positive and negative change scores with quality of life satisfaction and well-being renders prediction of variables beyond positive and negative change redundant. Variables entered into each equation were those identified as being significantly correlated with the dependent variable. Table 30 contains  $R^2$  values for each of the step-wise regression equations performed. Full regression equations and coefficients are contained in Appendix K.

Table 30

*Predicting Positive and Negative Change Scores at Reintegration for Single Expeditioners, Partnered Expeditioners, and Partners*

Dependent Variable	Participant Category	Adjusted R <sup>2</sup>
CiOQ Positive Change	Single Expeditioner	.94
	Partnered Expeditioner	.94
	Partner	.90
CiOQ Negative Change	Single Expeditioner	.94
	Partnered Expeditioner	.92
	Partner	.96

*Single Expeditioners*

For single expeditioners, 94 percent of the variance in positive change scores was predicted by personal growth initiative, performance difficulties at month 2, environmental satisfaction (all individual level factors) and appreciation (relationship level factor) at reunion and inversely predicted by balance between roles at pre-departure (relationship level factor) and the use of religious coping (Appendix K).

Ninety-four percent of the variance in negative change scores was predicted by general feelings of distress at month 5, a sense of purpose at pre-departure, levels of external work interference with family at reunion, and the use of denial as a coping strategy. Additionally, relationship communication at pre-departure, somatic distress at reunion, and commitment to relationships at reintegration also positively predicted negative change whilst pre-departure physical health satisfaction, positivism, reunion information sharing, and role expectations post-return negatively predicted negative change (Appendix K).

*Partnered Expeditioners*

For partnered expeditioners, 94 percent of the variance in positive change scores was predicted by relationship positivism at reunion and external work interference with family at pre-departure (Appendix K). In contrast, total distress at reunion negatively predicted positive change at reintegration (Appendix K). Ninety-two percent of the variance in partnered expeditioner negative change scores was predicted by relationship positivism at pre-departure, and inversely predicted by role expectations at pre-departure and somatic distress at reunion (Appendix K).

### *Partners*

For partners, 90 percent of the variance in positive change scores was predicted by negative change scores at reunion, and inversely predicted by general feelings of distress at reunion (Appendix K). Ninety-six percent of the variance in negative change scores was predicted by relationship avoidance coping at reunion, as well as negative change scores at reunion (Appendix K).

### *Qualitative Responses*

Comparison of 95 percent confidence intervals of theme endorsement at reintegration identified that there were no significant differences in the nature or frequency of qualitative themes reported by single expeditioners, partnered expeditioners, and partners as a function of demographic variables, absence length, or RTA transportation. For this reason, data has been collapsed across these variables.

### *Single Expeditioner Response Profiles*

Themes derived from single expeditioner interview transcripts obtained at reintegration are contained in Table 30. Comparison of 95% confidence intervals determined that the positive themes identified within single expeditioner response profiles of self-development and goal attainment were endorsed significantly more than knowledge sharing, respect, and formal support services ( $p < .05$  for all comparisons). Of

the negative themes the no response/nil theme was endorsed significantly less than missed milestones, loneliness, limited contact with colleagues from Antarctica, and missed relationship opportunities ( $p < .05$  for all comparisons). Furthermore, the high level of endorsement of the no response/nil category would suggest that for a proportion of single expeditioners there were no long-term negative experiences associated with Antarctic employment.

As demonstrated within earlier phases of the study, there were relatively equal numbers of positive (7) and negative (9) themes reported by single expeditioners (Table 30). It would also seem that the friendships developed during the course of Antarctic employment remain highly salient even after return such that these friendships are viewed positively and limited communication with colleagues from Antarctica is perceived negatively (Table 30). Another seeming parallel between positive and negative themes reported by single expeditioners is that goal attainment is viewed positively, whilst restlessness and boredom appeared to result if comparing goals achieved in Antarctica with goals pursued in more routine work environments (Table 31).

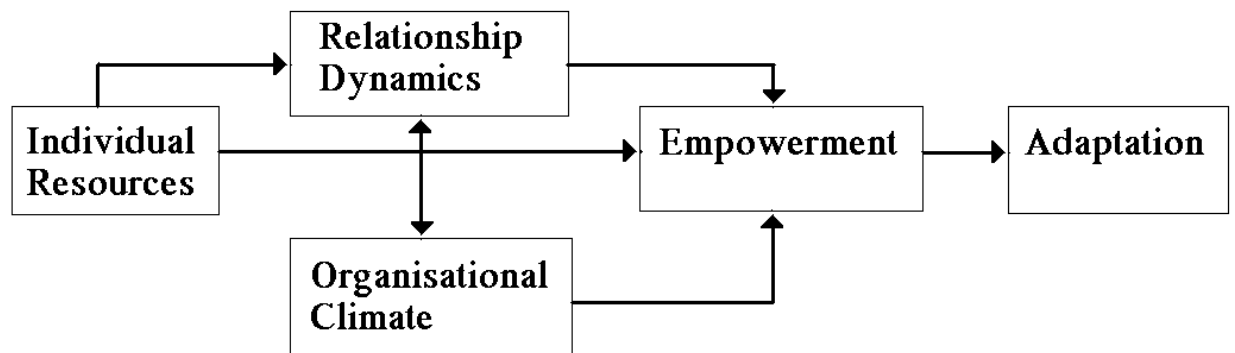
In order to develop a model articulating the mechanisms underpinning adaptation during the absence period interview transcripts were further analysed to determine links between the ordinate themes of work, relationship, and individual. The resultant model of factors influencing reintegration adaptation for single expeditioners is presented in Figure 13.



Table 31

*Qualitative Response Profiles for Single Expeditioners at Reintegration*

Superordinate Theme	Ordinate Theme	Constituent Theme	Frequency of Endorsement (%)
Positive	Individual	Self-development	27.69
		Goal attainment	22.70
		Self-knowledge	14.89
	Organisational	Knowledge sharing	8.51
		Respect	7.09
		Formal support services	4.96
Negative	Relationship	New friendships	14.18
		Less challenge	17.73
		Restlessness	10.64
	Individual	Boredom in routine roles	13.48
		Missed milestones	8.51
		Loneliness	7.09
	Organisational	Limited communication with colleagues	4.96
		Missed opportunities	2.13
		No response/nil	21.28
	Relationship	Delay before next departure	14.18



*Figure 13.* Model depicting factors that influence single expeditioner adaptation at reintegration.

*Individual Resources:* Individual resources primarily related to the expeditioners pre-existing psychological attributes and whether these facilitated positive or negative experiences. Individual resources that facilitated positive experiences included responses reflecting future-oriented optimism, positive reframing, and self-efficacy. Expeditioners explicitly stated that their own individual resources influenced their perceptions of and participation in the nature of relationship dynamics at this time. In other words, if they felt optimistic, used positive reframing, and had high levels of self-efficacy they believed themselves as having an enhanced capacity to contribute to positive organisational and relationship experiences, whereas if they had insufficient resources then they would not have any left over to contribute to these other domains. Additionally, single expeditioner response profiles indicated a direct link between personal resources and empowerment.

*Relationship Dynamics:* At reintegration, the emphasis previously placed on social support in facilitating adaptation had shifted to relationship dynamics in that the quality of interpersonal interactions were seen as influencing adaptation rather than the provision of social support. Positive relationship dynamics relating to communication trust, and respect facilitated positive adaptation whereas negative relationship dynamics

in which the expeditioner felt every interaction was effortful negatively impacted adaptation at this time.

*Organisational Climate:* Single expeditioners who maintained contact with the organisation believed they experienced better adaptation outcomes than those who did not. The rationales provided for this belief were that the organisation facilitated meaning-making of experiences by providing access to formal supports, informal supports, and educational material relating to the experience of Antarctic employment. This knowledge facilitated both more positive relationship dynamics as well as a sense of empowerment.

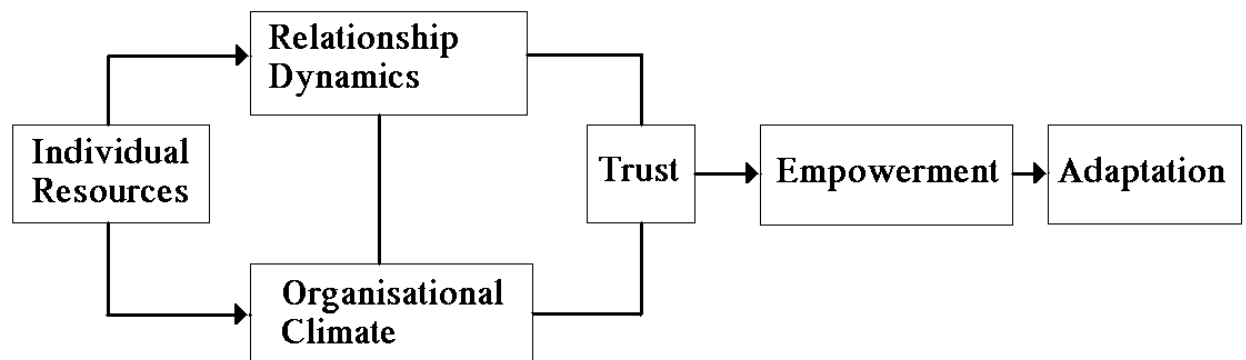
*Empowerment:* Single expeditioners often experienced a degree of empowerment associated with the development of new skills and experiences engendered by Antarctic employment that otherwise may not have been available to them. In particular, the uniqueness of their experience and ability to negotiate a period of time in one of the most extreme and unusual environments on Earth further facilitated this sense of empowerment. Additionally, when this sense of empowerment was facilitated beyond reunion and into reintegration through accumulation of further knowledge and experiences, it was associated with positive adaptation. It was this sense of empowerment that appeared to most strongly facilitate adaptive outcomes during the reintegration period.

#### *Partnered Expeditioner Response Profiles*

Themes derived from partnered expeditioner interview transcripts obtained at reintegration are contained in Table 31. Comparison of 95% confidence intervals identified that partnered expeditioners identified endorsed themes consistent with self-development and development of new friendships significantly greater than all other positive themes ( $p < .05$  for all comparisons). Within identified negative themes, the no response/nil category was endorsed significantly more than all other categories ( $p < .05$

for all comparisons). In addition to demonstrating considerable overlap in themes with single expeditioner response profiles at this time, there was also a similar number of positive (9) and negative (8) themes identified (Table 31). Again, some items between positive and negative thematic categories appeared to be inversely related to one another such that less challenge, reduced motivation, and inability to use skills seem to contrast with skill development. Additionally, relationship termination did occur in some instances and thus precluded the development of improved dynamics, increased trust in the relationship and partner strength, and greater appreciation for the support provided by partners (Table 31).

In order to develop a model articulating the mechanisms underpinning adaptation during the absence period interview transcripts were further analysed to determine links between the ordinate themes of work, relationship, and individual. The resultant model of factors influencing reintegration adaptation for partnered expeditioners is presented in Figure 14.



*Figure 14.* Model depicting factors that influence partnered expeditioner adaptation at reintegration.

*Individual Resources:* Individual resources primarily related to the expeditioners pre-existing psychological attributes and whether these facilitated positive or negative

Table 32

*Qualitative Response Profiles for Partnered Expeditioners at Reintegration*

Superordinate Theme	Ordinate Theme	Constituent Theme	Frequency of Endorsement (%)
Positive	Individual	Self-development	23.40
		Self-knowledge	11.70
	Organisational	Knowledge sharing	7.80
		Respect	5.67
		Formal support services	1.77
		New friendships	24.82
	Relationship	Trust	14.18
		Improved dynamics	6.38
		Greater appreciation	4.28
		Less challenge	14.18
Negative	Individual	Reduced motivation	4.26
		Inability to use skills	7.09
	Organisational	Reduced satisfaction	7.09
		Unemployment	5.32
		Termination of relationship	15.96
	Relationship	Partner way of future absences	14.18
		No response/nil	35.46
	Other		

experiences. Individual resources that facilitated positive experiences included responses reflecting future-oriented optimism, positive reframing, and self-efficacy. Of note however was that expeditioners explicitly stated that their own individual resources influenced their perceptions of and participation in development of the organisational climate, as well as the nature of relationship dynamics at this time. In other words, if they felt optimistic, used positive reframing, and had high levels of self-efficacy they believed themselves as having an enhanced capacity to contribute to positive organisational and relationship experiences, whereas if they had insufficient resources then they would not have any left over to contribute to these other domains.

*Relationship Dynamics:* Positive relationship dynamics experienced by partnered expeditioners at reintegration facilitated trust in the strength and commitment to intimate relationships which had successfully withstood the Antarctic employment experience. Most expeditioners interviewed indicated that the nature of relationship dynamics had improved relative to pre-departure functioning, particularly in regards to communication and role flexibility. Few negative relationship dynamics were experienced at this time, which expeditioners attributed to successful adaptation. Additionally, positive relationship dynamics were reported as facilitative of positive engagement with the organisation and further employment within Antarctic programs.

*Organisational Climate:* Partnered expeditioners who maintained contact with the organisation believed they experienced better adaptation outcomes than those who did not. As identified within single expeditioner profiles, the rationales provided for this belief were that the organisation facilitated meaning-making of experiences by providing access to formal supports, informal supports, and educational material relating to the experience of Antarctic employment. This knowledge facilitated both more positive relationship dynamics as well as a sense of empowerment.

*Trust:* Trust referred to the belief that partnered expeditioner experiences of Antarctic employment to date would benefit them both personally and professionally in the short and long-term. It also related to the degree of trust engendered by the nature of relationship dynamics and organisational climate in facilitating personal and professional development respectively.

*Empowerment:* As reported by single expeditioners, partnered expeditioners often experienced a degree of empowerment associated with the development of new skills and experiences engendered by Antarctic employment that otherwise may not have been available to them. In particular, the uniqueness of their experience and ability to negotiate a period of time in one of the most extreme and unusual environments on Earth further facilitated this sense of empowerment. Additionally, when this sense of empowerment was facilitated beyond reunion and into reintegration through accumulation of further knowledge, experiences, and improved functioning (at individual, relationship, and organisational levels) it was associated with positive adaptation. It was this sense of empowerment that appeared to most strongly facilitate adaptive outcomes during the reintegration period.

#### *Partner Response Profiles*

Themes derived from partner interview transcripts obtained at reintegration are contained in Table 32. Comparison of 95% confidence intervals identified that partner endorsed themes consistent with self-development significantly more than any other positive theme associated with the experience of Antarctic employment ( $p < .05$  for all comparisons). In contrast, negative themes consistent with relationship termination were endorsed significantly more than those associated with no response, reduced quality of life and less interdependence between members of the relationship unit.

Similar numbers of positive (5) and negative (6) themes were identified within partner response profiles (Table 32). As demonstrated within both single and partnered

expeditioner profiles, some items between positive and negative thematic categories appeared to be inversely related to one another such that whilst increased trust in the relationship strength and partnered expeditioner's commitment to the relationship as well as improved relationship dynamics were identified as a positive experience, reduced interdependence was seen as a negative relationship outcome.

In order to develop a model articulating the mechanisms underpinning adaptation during the absence period interview transcripts were further analysed to determine links between the ordinate themes of work, relationship, and individual. The resultant model of factors influencing reintegration adaptation for partner is presented in Figure 15.

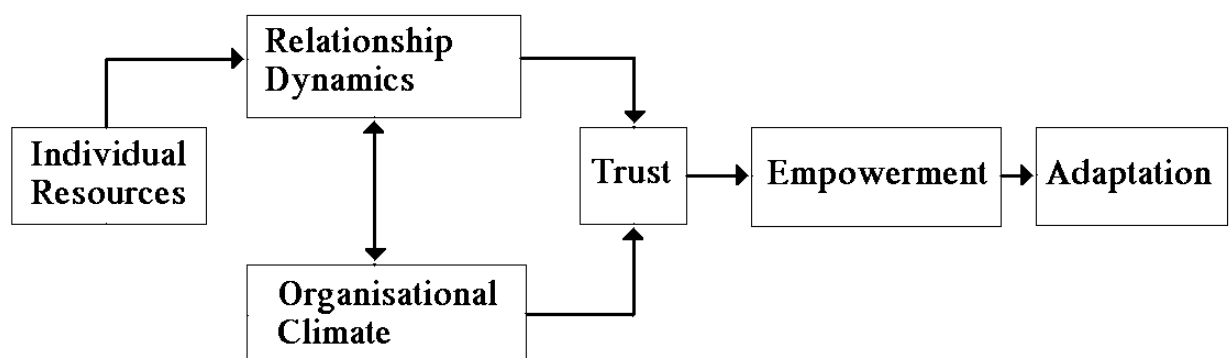


Figure 15. Model depicting factors that influence partner adaptation at reintegration.

*Individual Resources:* As was demonstrated within the expeditioner sample, individual resources primarily related to partner's pre-existing psychological attributes and whether these facilitated positive or negative experiences. Individual resources that facilitated positive experiences included responses reflecting future-oriented optimism, positive reframing, and self-efficacy.

*Relationship Dynamics:* Positive relationship dynamics were seen as facilitative of ongoing trust in the relationship, and in turn, more positive adaptation. Partners



reported enhanced relationship dynamics relative to previous stages of Antarctic employment, which they primarily attributed to enhanced quality and quantity of communication.

*Organisational Climate:* Partners who perceived the organisational climate to be facilitative of both their own adaptation as well as the adaptation of the expeditioner felt that this directly influenced their own approach to relationship dynamics during this time. In contrast, those who believed the organisational climate to have either undermined relationship dynamics or engendered relationship termination were likely to report degradations in relationship dynamics. Of those partners who were negatively predisposed to the organisational climate, a proportion indicated that they felt the organisation was responsible for influencing the expeditioner's decision to return for additional Antarctic employment regardless of the impact it had on the relationship unit.

*Trust:* Trust referred to the degree to which partners were confident in their own ability and the ability of the expeditioner to continue to experience a meaningful and committed relationship. Many partners indicated that trust was facilitated by increased communication relative to earlier stages of Antarctic employment, and increased self-efficacy as a result of their own experiences of Antarctic employment.

*Empowerment:* When partners experienced trust, it allowed them to also experience a degree of empowerment associated with the development of new skills and experiences that otherwise may not have been available to them. In particular, the ability to successfully negotiate a period of time without the expeditioner and then develop an enhanced relationship quality upon their return was identified as an empowering experience. It was this sense of empowerment that appeared to most strongly facilitate adaptive outcomes during the absence period.

### *Comparing Expeditioner and Partner Response Profiles*

As demonstrated at pre-departure and during the absence period, partners (Table 33) identified fewer positive and negative themes than both single (Table 31) and partnered expeditioners (Table 32). However, reintegration response profiles demonstrated higher degrees of overlap between items identified between expeditioners (both single and partnered) and partners. Additionally, the concerns regarding engagement of formal support services offered by the AAD demonstrated at reunion appeared to have been largely overcome.

## 9.4 Discussion

The aim of the current phase of the study was to investigate single expeditioner, partnered expeditioner, and partner functioning 12 months post-RTA to determine the level of positive change, negative change, and adaptation that occurred following the Antarctic employment experience. It was hypothesised that: *H1*) Mean quality of life and well-being scores would be significantly higher than those reported at reunion, as well as those reported at pre-departure for all participant categories; *H2*) At reintegration, mean positive change scores would be significantly higher than mean negative change scores for all participant categories and that mean negative change scores will be significantly lower than those reported at reunion; and *H3*) Positive and negative change scores reported by all participant categories at reintegration would be predicted by a combination of individual, organisational, and relationship level factors measured across the employment experience from pre-departure, absence, and reunion.

### *Quality of Life Satisfaction and Well-Being*

The hypothesis predicting that mean quality of life and well-being scores would be significantly higher than those reported at reunion and those reported at pre-departure

Table 33

*Qualitative Response Profiles for Partners at Reintegration*

Superordinate Theme	Ordinate Theme	Constituent Theme	Frequency of Endorsement (%)
Positive	Individual	Self-development	53.69
	Organisational	Formal support services	11.41
	Relationship	Trust	20.13
		Improved dynamics	6.71
	Other	No response/nil	8.05
Negative	Individual	Reduced quality of life	10.07
	Organisational	Source of tension	20.13
		Intentions to reapply	20.13
	Relationship	Termination of relationship	26.85
		Less interdependence	9.40
	Other	No response/nil	13.42

for all participant categories was partially supported. Within both single and partnered expeditioner categories, well-being scores increased significantly between reunion and reintegration (evidenced by lower HSCL-21 scores). Partner somatic and general feelings of distress declined between reunion and reintegration, with scores on all HSCL-21 dimensions also differing significantly between pre-departure and reintegration such that greater well-being was experienced at reintegration. In regards to single expeditioner quality of life scores, relationship and environmental satisfaction scores were significantly higher than both reunion and pre-departure scores, however physical health satisfaction scores were significantly lower at reintegration compared to both reunion and pre-departure.

For partnered expeditioners, environmental satisfaction scores were significantly higher at reintegration compared to pre-departure, however physical health satisfaction scores were significantly lower than those reported at both reunion and pre-departure. Partners also reported significantly higher levels of environmental satisfaction at reintegration compared to both reunion and pre-departure, however physical health satisfaction scores were significantly lower than those reported at pre-departure. Results demonstrating an improvement in functioning from reunion, yet no significant difference from pre-departure are consistent with the theory of resilience in which resilience refers to a return to baseline, or homeostasis, following exposure to a challenging event whilst results demonstrating an improvement between both reunion and reintegration, as well as pre-departure and reintegration demonstrate growth or salutogenic outcomes (Antonovsky, 1987; O'Leary & Ickovics, 1995; Selye, 1974; Tedeschi & Calhoun, 1999).

In contrast, decrements in scores from either reunion to reintegration, or pre-departure to reintegration suggest a lack of positive or effective adaptation to the challenging situation (O'Leary & Ickovics). However, the only measure on which participants reported declines in satisfaction was physical health. Considering evidence documenting that expeditioners

physical conditioning declines over the course of a winter (Dick, 1985), and that the original motivation to be in peak physical condition (i.e. to enhance the chance of selection for Antarctic employment) is no longer relevant, it is perhaps not surprising that satisfaction with physical health declined. Declines in partner physical health satisfaction are more difficult to explain, but may reflect the shared environment (e.g. eating and exercise patterns) with expeditioners.

### *Assessing Positive and Negative Change*

The hypothesis predicting that mean positive change scores would be significantly higher than mean negative change scores at reintegration for all participant categories, and that negative change scores would be significantly lower than those reported at reunion was supported and is consistent with the theory of hedonic adaptation (Brickman & Campbell, 1971; Brickman, Coates, & Janoff-Bulman, 1978; Lucas, Clark, Georgellis & Diener, 2003) whereby initial decrements in psychological well being and life satisfaction demonstrated following exposure to a negative or challenging situation gradually regress to baseline levels, and that the process of meaning-making or cognitive restructuring that occurs to facilitate this enables identification, and in some cases, elaboration of positive aspects of the experience (Park & Ai, 2006; Patterson, 2002; Tebes, Irish, Puglisi Vasquez, & Perkins, 2004).

Considering that relatively equal numbers of positive and negative themes were identified within the qualitative response profiles of all participant categories, this would suggest that the differences between mean positive and negative change scores recorded at this time are not due to an imbalance in the number of positive and negative experiences further supporting the theory that cognitive constructions of the experience are more influential than the objective experiences themselves. It is also possible that the high levels of traits including personal growth initiative and optimism recorded at pre-departure facilitate

this cognitive restructuring process (Headey & Wearing, 1989). The high levels of pre-existing personal growth initiative, optimism, and ability to develop cognitive constructions facilitative of positive adaptation may also indicate that presence of hardiness within these participants. Hardiness is conceptualised as a trait which enables individuals to remain psychologically healthy despite exposure to stressors (Kobasa, Maddi, & Kahn, 1982). According to Kobasa (1979), the effects of hardiness on mental health are mediated by the individual's cognitive appraisal of a stressful situation and his/her repertoire of coping strategies. Specifically, hardiness alters two appraisal components: it reduces the appraisal of threat and increases one's expectations that coping efforts will be successful (Tartasky, 1993).

It is also possible that positive change scores reported by partnered expeditioners and partners were facilitated by the degree of overlap demonstrated between the qualitative response profiles. It is arguable that this overlap is due to increased synchrony in relationship schemas which have been developed over the course of the reintegration period thereby facilitative positive adaptation and resilience following the absence and reunion period (McCubbin & McCubbin). Previous research has identified that relationship schemas are developed by shared experiences and effective communication strategies (McCubbin & McCubbin) suggesting that earlier difficulties in communication appear to have resolved at 12 months post-RTA.

### *Predicting Positive and Negative Change*

The hypothesis predicting that positive change scores reported by all participant categories at reintegration would be predicted by a combination of individual, organisational, and relationship level factors was supported only for single and partnered expeditioner negative change scores. All other regression equations comprised either individual level

factors, or a combination of individual and relationship level factors. This finding was also mirrored in the qualitative response profiles whereby organisational factors were endorsed to a lesser extent than both individual and relationship variables. These findings would suggest that the salience of work-related factors associated with Antarctic employment are less influential than both individual and relationship level factors when it comes to the reintegration experience which suggests that externalisation of negative affect towards the organisation as demonstrated during the absence period was primarily a coping resource rather than a reflection of systemic organisational issues.

Furthermore, the prediction that positive and negative change would be predicted by measures taken across the employment experience from pre-departure, absence, and reunion was supported only for positive change scores reported by participants. In contrast, negative change scores were influenced by a combination of pre-departure, reunion, and reintegration experiences. These findings would suggest that although the absence period is traditionally considered one of the most challenging aspects of vocational absences, its influence on post-reunion functioning is superseded by factors prior and subsequent to this period. This finding is also largely supported by the nature of qualitative themes identified within reintegration interview transcripts whereby post-return experiences, although linked to absence experiences, were more salient than absence experiences per se. In this way, the current findings support arguments for viewing vocational absences as spanning from pre-departure through absence, reunion, and reintegration, rather than being confined to the absence period due to the interdependence demonstrated between these phases of the employment experience (Busuttil & Busuttil, 2001; Logan, 1987).

### *Qualitative Response Profiles*

At reintegration it is evident that single expeditioners, partnered expeditioners, and partners continue to cognitively organise their experiences in a way that incorporates individual, relationship, and organisational factors, even if the expeditioner has ceased formal involvement with the Australian Antarctic program. Furthermore, response profiles indicate a greater degree of convergence regarding cognitive interpretations of experiences at this point in time. As demonstrated in Figures 13-15 across all participant categories the themes of individual resources, relationship dynamics, organisational climate, and empowerment were seen as facilitative of positive adaptation experiences and as such serve as a foundation for developing targeted intervention strategies to maximise positive outcomes.

However, it may also be that increased convergence in cognitive constructions of the experience themselves facilitate positive adaptation by reducing potential sources of conflict arising from differential interpretations of events and experiences. This phenomena, termed collective cognitive convergence, arises from the finding that people who interact frequently having increasingly similar thinking patterns and therefore cognitive interpretations of events and experiences (Parunak, Belding, Hilscher, & Brueckner, 2008). Thus in regards to the current study, increased communication facilitated by geographic proximity to partners facilitated increased convergence between expeditioners and partners, which may in turn have facilitated more positive relationship dynamics and feelings of trust towards one another.

Consistent with quantitative measures of positive and negative change and earlier stages of the research (i.e. pre-departure, absence, and reunion), all participant categories simultaneously reported both positive and negative outcomes associated with the reintegration period. A growing body of evidence exists reporting the coexistence of both positive and negative outcomes, and how these relate to positive and negative change (e.g. Tedeschi & Calhoun, 1995, 1996). In this way results of the current study further emphasise



the need to adopt comprehensive approaches to research undertaken with Antarctic populations, including adoption of a salutogenic paradigm which acknowledges the possibility (if not likelihood) of concurrent positive and negative experiences, and resilience and vulnerability factors interacting to influence outcomes.

### *Implications*

The majority of single expeditioner, partnered expeditioner, and partner responses, both quantitative and qualitative, indicate that there are minimal long-term negative effects associated with Antarctic employment experiences. In fact, there was evidence of improved functioning beyond that reported at pre-departure consistent with not only resilience, but also growth outcomes. Furthermore, it would appear that the high levels of traits associated with resilience and growth outcomes demonstrated at pre-departure suggest an ability to adapt to challenging situations, largely by facilitating a cognitive processing style that maximises positive input as opposed to negative input.

Although some authors have argued that this propensity is related to innate personality characteristics, it is possible that by addressing factors identified in the regression equations as predictive of positive and negative change functioning (e.g. individual and family level coping strategies) may be maximised for single expeditioners, partnered expeditioners, and partners alike. In turn, by maximising the positive outcomes associated with the Antarctic experience it may be possible to enhance the retention of experienced expeditioners for future employment.

CHAPTER TEN

GENERAL DISCUSSION

## 10.1 General Discussion

The current study investigated the experience of Antarctic employment for single expeditioners, partnered expeditioners, and partners from pre-departure through to reintegration in an effort to identify factors which facilitate positive and negative adaptation. Previous research on the psychological issues that affect returning Antarctic expeditioners testifies to the coexistence of both positive and negative outcomes derived from their experience 'on the ice' (Palinkas, 2003; Taylor, 1973; Wood et al., 2000). However the predominant focus of such research has been limited to adjustment outcomes rather than the processes that underlie adaptation - processes which the current research has identified to individual, organisational, and relationship level factors and how these are cognitively organised to develop meaning.

Identification of the salient predictors of resilience and adaptation, and articulation of the mechanisms linking them to adaptive outcomes for expeditioners and partners alike may enable intervention strategies to focus on enhancing this capacity throughout the employment experience. Resilience and vulnerability mechanisms are discrete and operate concurrently, and both must be examined if a comprehensive understanding of reintegration is to be developed. Adopting a salutogenic perspective, the present study investigated the experience of Antarctic employment for single expeditioners, partnered expeditioners, and partners from pre-departure through to reintegration in an effort to identify factors which facilitate positive and negative adaptation. This was achieved through:

1. Identifying factors that promote psychological resilience and adaptation in Antarctic expeditioners and describing their relationship to positive and negative change arising from the expedition experience,

2. Identifying factors that promote psychological resilience and adaptation in Antarctic expeditioners partners and describing their relationship to positive and negative change arising from the separation experience, and
3. Describing the quality and nature of the reintegration experience by comparing the processes and outcomes of each of the above, and their implications for the process of reintegration over a 12 month period.

Additionally, the current study examined the impact of ship versus air-based personnel movement on these processes. Specifically, it aimed to assess whether expeditioners who experienced ship-based RTA could be differentiated from those who experienced plane-based RTA based on subjective health and well-being response profiles. In addition to Australia's introduction of air-based personnel movement, other nations operating research programs within Antarctica that also utilise air-based transportation of expeditioners and supplies include the United States of America, New Zealand, United Kingdom, Italy, Argentina, Chile, and Russia (AAD, 2006). However, no published research prior to the current results exists regarding the impact of a shift from ship-based to air-based transportation on expeditioner health and well-being. In this way the shift from ship to air-based personnel movement within the Australian Antarctic program offered a unique opportunity to investigate the impact of differing transportation methods on expeditioner health and well-being. Such knowledge can now be integrated into existing training and support programs to ensure that they effectively meet expeditioner needs.

In order to achieve these outcomes the current research project adopted a lagged cohort, longitudinal design incorporating both quantitative and qualitative methods of data collection assessing resilience and vulnerability factors. Incorporation of a mixed method approach to data collection enabled identification and quantification of change in individual, organisational and relationship level factors across the Antarctic

employment experience as well as contextual information that elucidated the mechanisms underpinning these change processes. The longitudinal design accounted for the time frame within which adaptation and growth takes place and allowed repeated measures assessment of expeditioners and partners during pre-departure, absence, reunion, and reintegration experiences associated with Antarctic employment. Assessment spanning the duration of Antarctic employment in this manner was essential to the process of constructing a comprehensive model of adaptation within this population. It also allowed for the influence of unanticipated individual, organisational, and relationship factors to be accommodated within the analysis. Lagged cohorts allowed examination of contextual influences on adaptation (over time) and consistency of these, as well as facilitated comparison of the two modes of transportation.

#### *Comparing the Stages of Antarctic Employment*

Comparisons between quantitative response profiles at various stages of the Antarctic experience is made throughout the thesis for all participant categories. These comparisons identified that significantly higher levels of functioning were recorded for expeditioners at reintegration compared to all other time points. In contrast, mid-absence and reunion periods were associated with lower levels of expeditioner well-being. These data suggest that the absence and reunion periods are more difficult to negotiate than the pre-departure and reintegration period. In contrast, the reintegration period is identified to be more growth enhancing. It is arguable that the preceding challenges associated with the absence and reunion periods provides expeditioners with a motivation to engage cognitive restructuring techniques and thereby experience more positive and growth-enhancing outcomes. This argument is consistent with previous research which has identified that higher levels of challenge and distress are associated with enhanced growth outcomes (Tedeschi & Calhoun, 1995).

In contrast, comparison of partner quantitative response profiles across the Antarctic employment experience identified that significantly higher levels of well-being were recorded at reunion and lower levels of well-being during the pre-departure period. It is possible that increases in well-being at reunion that are sustained throughout reintegration are a result of return to homeostasis rather than demonstrating growth (Waugh, Fredrickson, & Taylor, 2008). In this way it can be argued that expeditioners are more likely to experience growth outcomes due to the extremes of functioning they are required to demonstrate in Antarctica, whilst partners are more likely to experience resilient outcomes once 'routine functioning' is resumed (i.e. the expeditioner returns). This distinction is an important one. As described by O'Leary and Ickovics (1995), individuals who return to baseline functioning following exposure to challenges are resilient. However, those who demonstrate exceed baseline functioning demonstrate growth and should therefore be considered as distinct from those who are 'merely' resilient.

#### *Evidence of Salutogenesis Following Antarctic Employment*

Overall findings of the studies presented in this thesis are consistent with a growing body of evidence that demonstrates positive change resulting from exposure to challenging events (Joseph, Linley & Harris, 2004; Linley & Joseph, 2004). At reintegration, all participant categories reported significantly higher levels of positive as opposed to negative change. Additionally, functioning on numerous indices (including well-being and quality of life satisfaction) had improved compared to earlier phases of the employment experiences, including pre-departure. Analysis of quantitative and qualitative data indicates that these positive changes are likely to be due to the nature of cognitive processing undertaken at each phase of the Antarctic employment experience rendering each meaningful, and in turn that facilitated adaptation.

Furthermore, by assessing experiences longitudinally from pre-departure through absence, reunion, and reintegration it was identified that pre-departure and post-return experiences were more influential in predicting positive and negative change at 12 months post-return than those that occurred during the absence period. These findings have important implications for the development and implementation of proactive prevention and intervention programs in terms of the nature of issues targeted and the times at which they are undertaken – by overlooking the pre-departure and reunion experiences in previous research studies we have been overlooking key points at which intervention is likely to be readily received and effective.

Cognitive restructuring and the development of new schemas is facilitated in environments in which information sharing and communication are routinely engaged (Parunak, et al., 2008). Thus it is not surprising that information sharing and communication were identified (either directly, as within the pre-departure and absence models of adaptation, or indirectly when subsumed under relationship dynamics and organisational climate in models of reunion and reintegration) as important components in facilitating positive adaptation for single expeditioners, partnered expeditioners, and partners throughout the Antarctic employment experience.

When information sharing and communication was low, greater difficulties were experienced in trying to reconcile conflicting information or experiences. As a result, divergence between partnered expeditioner and partner qualitative response profiles occurred, suggesting divergence in relationship schema. This divergence is likely to undermine adaptation within these participant categories (appearing to peak during reunion) as it has been demonstrated that a shared relationship schema is necessary to facilitate positive adaptation and resilience in the face of challenging situations (McCubbin, et al., 1993; Patterson & McCubbin, 1984). However, results demonstrate that the degree of similarity between models reflecting cognitive representations of the

reintegration period demonstrated the highest level of overlap across participant categories and assessment periods. This suggests that the development of coherent schemas in which Antarctic and non-Antarctic experiences have been integrated has been largely accomplished. It suggests that effective communication strategies as detailed above have successfully resulted in facilitating resilience and growth experiences for expeditioners and partners alike, although does not preclude shared negative experiences having occurred.

The other important issue to consider in relation to cognitive constructions of the Antarctic employment experience and its relationship to adaptation is the degree to which individuals understand and make meaning of their experiences. Multiple researchers have reported evidence that demonstrates individuals who are able to identify benefits associated with a challenging experience (e.g., Lehman, et al., 1993; Park & Cohen, 1993; Tedeschi & Calhoun, 1996) as well as integrate this within their existing schemas (e.g., Janoff-Bulman, 1992; McIntosh, Silver, & Wortman, 1993; Tait & Silver, 1989), report more positive outcomes which arguably indicate more positive adaptation. These results were also demonstrated within the current study population such that single expeditioners, partnered expeditioners, and partners who were able to find benefit through their experiences (which was identified by reports of improved functioning in multiple domains, as well as empowerment) experienced greater adaptation compared to those who did not. Furthermore, the similarities in model components between pre-departure (Figures 2&3) and reintegration (Figures 13-15) suggest that the resultant experiences of Antarctic employment were integrated within existing schemas to develop new, more elaborate cognitive frameworks.

However, negative experiences following RTA were also experienced, particularly during the reunion period. These negative outcomes were primarily associated with difficulties transitioning from roles and expectations associated with



Antarctic station life to those associated with routine daily experience at home. For some, these transition difficulties undermined any desire to return for subsequent Antarctic employment. For some, they were associated with relationship dissolution from either their Antarctic colleagues or pre-existing intimate partners. However, at 12-month follow-up most expeditioners who had undergone these negative experiences could acknowledge concurrent positive and negative outcomes as a result of their Antarctic experience.

### *Development of an Expeditioner Subculture*

Participant response profiles emphasising the importance of team dynamics and support provided by colleagues throughout the four phases of the employment experience provides evidence for the development of an expeditioner subculture. Furthermore, the degree of similarity between single and partnered expeditioner qualitative response profiles increased over the course of their time ‘on the ice’ suggesting increased similarity in schemas as a result of shared norms and experiences, defining features of subculture development (Stamper, Liu, Hafkamp, & Ades, 2000). The development of subcultures within Antarctic expeditioner populations has been previously documented to extend to the development of new forms of verbal communication comprised of ticks and clicks (Hince, 2000). Furthermore, it would appear that a perception of station colleagues as an ‘in-group’ and AAD Head Office staff as an ‘out-group’ (as evidenced by externalisation of blame and dissatisfaction to Head Office staff and policies) thereby providing further evidence of the development of a subculture during their Antarctic absence.

Membership within a subculture has been associated with increased perceptions of social support which in turn has been associated with an increased sense of coherence (Wolff & Ratner, 1999), and therefore greater adaptation and resilience. In this way it is

arguable that membership within an Antarctic station subculture may have provided increased perceptions of social support thereby enhancing adaptation throughout their employment experience. It may also explain the reduced dependence on pre-existing social support networks when 'on the ice'.

In contrast it appears that partners did not have access to supports or subculture membership to provide them similar benefits. It is likely that the geographic dislocation between partners and lack of regular contact with others in a similar situation resulted in feelings of isolation, reduced ability to 'normalise' their experience, and therefore reduced well-being in the expeditioner's absence.

#### *Comparing Ship versus Air-based Personnel Transportation*

During the course of this research a unique opportunity arose to investigate the impact of a change in personnel transportation arrangements to include both ship and air-based personnel movement processes. Results of the current study demonstrate that personnel transportation method does not significantly impact functioning within Antarctic populations. Despite evidence of qualitative differences in relation to the reunion period whereby expeditioners who returned by plane reported difficulties in adjustment associated with a contracted period in which to psychologically and physically prepare for challenges inherent within this period, these difficulties had largely resolved by two months post-RTA. It is arguable that these difficulties would be more pronounced in expeditioners who had spent longer periods of time in Antarctica, although the small sample size of expeditioners who returned by plane in the current research precludes statistical confirmation of this and provides an opportunity for future research.

Although evidence regarding the efficacy of postponing immediate release of personnel following rapid returns (such as those experienced by expeditioners returning

by plane) is equivocal, this may be due to these situations being extended up to one week post-return in order to facilitate full debriefing of all members, despite research evidence indicating that such debriefing is not always facilitative of positive adaptation (and in some cases, engenders negative outcomes) (Rose, Bisson, & Wessely, 2003; van Emmerik, Kamphuis, Hulsbosch, & Emmelkamp, 2002). Therefore it is possible that expeditioners who return by plane may benefit from postponing reunion with family and friends for 24 hours post-return to allow for greater cognitive processing and physiological acclimatisation to occur. Alternatively, a reunion program that enabled expeditioners to reunite with family and friends, however required them to return to AAD head office for a period of time the next day (or over the following days) to return clothing, and catch up with colleagues in an informal manner (i.e. through barbecues, or dinners) may also facilitate this cognitive processing whilst providing the collegial support readily identified by expeditioners as facilitative of positive adaptation at reunion.

### *The Importance of Social Support*

The importance of social support from fellow expeditioners was repeatedly emphasised at all points of the Antarctic employment experience. At pre-departure, it facilitated information sharing (learning about what to expect, strategies that help in negotiating these challenges, using unfamiliar equipment, and normalisation of affective experiences) and positively contributed to adaptive coping strategies and cognitive constructions of the experience. During the absence period it provided validation and normalisation of experiences, as well as exposure to alternative cognitive frames of references to facilitate positive adaptation to the unique characteristics of the Antarctic environment.

At both reunion and reintegration this theme of validation and normalisation was an important component in restructuring schemas to accommodate both pre-existing and subsequent Antarctic experiences. Organisational practices that encouraged expeditioner interactions (such as station meetings), particularly during the pre-departure training period, were readily identified by both single and partnered expeditioners as a positive aspect of the employment experience. This finding further supports the recommendation of a reunion program which mirrors aspects of the pre-departure program in terms of facilitating collegial interactions, as well as providing educational and support resources for expeditioners and partners alike at this period.

#### *The Unique Aspects of Antarctic Employment Experiences*

A further issue of importance derived from results of the current study are the observable differences between military (and other work roles involving vocational absences) and Antarctic experiences of employment. This is an important consideration for future research as it demonstrates that findings from other populations do not readily generalise to Antarctic populations, and therefore may detrimentally impact or inhibit resilience and adaptation processes if used to inform policies within this cohort. Although the nature of challenges that need to be negotiated at each stage of the employment experience demonstrate a degree of overlap, the comparative absence of severe decrements in functioning demonstrated by single expeditioners, partnered expeditioners, and partners and the processes by which these are achieved suggests that military models of employment experiences are not appropriate for use in Antarctic contexts. It would also appear that Antarctic populations demonstrate a greater propensity to report both positive adaptation and growth outcomes compared to military populations.

### *Adaptation to Antarctic Employment*

The primary task associated with each phase of the Antarctic employment experience is adaptation, which based on results of the current study, involves cognitive restructuring to accommodate new information, experiences, and expectations – that is, develop a new schema – thereby facilitating enhanced functioning and subjective well-being. As demonstrated through the previous discussion, a consistent theme demonstrated throughout the study was the multidimensional nature of factors influencing adaptation for all participant categories throughout all phases of the employment experience. These factors spanned individual, organisational, and relationship level factors as well as demonstrated interrelationships between experiences at each phase of employment.

A proposed model integrating these factors as they relate to the current study findings is presented in Figure 6, with each component being discussed in greater detail below. Although the emphasis and exact nature of experiences within each category within the model differed between single expeditioners, partnered expeditioners, and partners, the high degree of similarity across the overarching themes enabled development of a single model to account for the experiences of all three participant categories. Future research should attempt to empirically validate this model through use of structural equation modelling techniques. Additionally, future research should assess the cross-cultural applicability of the proposed model.

*Individual resources:* Individual resources featured as the initial factor that influenced positive adaptation for all participant categories at all stages of the Antarctic employment experience, from pre-departure through to reintegration. Within the present study, individual resources referred to pre-existing psychological and physiological resources which facilitated engagement in both relationship and organisational domains. In particular it was identified that optimism, self-efficacy, and the use of positive

reframing all consistently enhanced adaptive capacity throughout the employment experience for all participant categories.

Previous researchers have reported that optimistic individuals deal with challenges more effectively than those who are less optimistic as they continue to engage efforts to address rather than avoid the issue (Carver & Scheier, 1987). As such, higher levels of optimism are associated with more positive adaptation through effortful engagement of problem-focused strategies (Fitzgerald, Tennen, Affleck, & Pransky, 1993). Self-efficacy has also been associated with positive adaptation outcomes by engendering a sense of competence and control over the challenging event and its sequelae (Schiaffmo & Revenson, 1992). Provision of timely and accurate information facilitates the development of enhanced self-efficacy, particularly within an organisational network (Jimmieson, Terry, & Callan, 2004). Positive reframing enables effective integration of material into existing schemas as it does not pose a threat to previous held worldviews (Carver & Scheier, 1994; Folkman & Maskowitz, 2000; Janoff-Bulman, 1992) thereby facilitating positive adaptation.

Research indicates that these individual resources identified within the present thesis (i.e. optimism, self-efficacy, and positive reframing) are not static (e.g. Beck & Strong, 1982; Folkman & Maskowitz), but amenable to change, and therefore may represent important avenues for proactive intervention strategies. Additionally, the degree to which individual resources can be accessed and utilised in maintaining relationships and contributing to the development of a positive organisational climate were also seen to influence positive adaptation.

*Relationship dynamics:* The importance of relationship dynamics in facilitating positive adaptation were identified by partnered expeditioners and partners at all stages of the Antarctic employment experience from pre-departure through to reintegration emphasising the importance of incorporating a comprehensive assessment approach (i.e.

beyond the individual) to examine adaptation processes. For single expeditioners, relationship dynamics featured as a predictor of positive adaptation at reintegration but not prior to this. Many single expeditioners identified that the Antarctic experience engendered greater appreciation for others and the influence of important others in facilitating and regulating positive affect, and this may account for the emergence of relationship dynamics as a predictor of positive adaptation at reintegration within this participant category.

Thus within the present research relationship dynamics referred to the nature of interpersonal interactions occurring primarily between expeditioners and significant others, i.e. partners. Positive relationship dynamics such as open communication, communal activities, and agreement on relationship roles facilitate the development of a shared relationship schema (McCubbin, McCubbin, Thompson, Han, & Allen, 1997), which in turn facilitates shared positive experiences, trust in partners/significant others, and empowerment as a result of these.

The presence of a close, confiding relationship has been associated with lower levels of distress (Dunkel-Schetter & Bennett, 1990; Wethington & Kessler, 1986), and greater adaptation to challenging events due to collective cognitive convergence (Parunak, et al., 2008). Fischer and Phillips (1982) further argue that individuals who lack intimate relationships are disadvantaged in regards to access to social support, with this likely to be due to the absence of a readily accessible and reciprocal confiding relationship (Dean, Lin, Tausig, & Ensel, 1980; Miller & Ingram, 1979).

Although individuals' involved intimate relationships generally have numerous psychological and social advantages over single individuals, much of this may be limited to those engaged in satisfying and fulfilling relationships (Coyne & DeLongis, 1986). There is some evidence that individuals within unsatisfactory relationships (i.e. those typified by negative relationship dynamics) are likely to experience more negative

psychological well-being than those who are single (Gove, Hughes, & Style, 1983). People within unsatisfactory relationships report more physical illness and depression, heavier drinking, and more isolation from persons outside their relationship than do individuals involved in fulfilling intimate relationships (Gove et al.). Individuals who are within unsatisfactory relationships are likely to be distressed by their situation, and one can expect that this strain would be exacerbated by stress and strains in other areas of their lives including challenges associated with Antarctic employment.

Relationships provide the social context where collective knowledge can be shared and needs articulated (Paton et al., 2008). For this reason, individuals within these relationships need to be able to accurately articulate their problems and communicate questions about these problems to organisational agencies so that they can receive the information that is relevant to their needs in order to have a more accurate perception regarding the nature of current and future challenges (Lakser & Weiss, 2003). This will reduce their uncertainty and increase their trust in the organisation.

*Organisational climate:* Organisational climate was identified as a predictor of positive adaptation by both single and partnered expeditioners at all stages of the Antarctic employment experience. Considering that they are consistently engaged in this culture, with little demarcation between work and non-work roles limited during the absence period, this is not surprising. In contrast, organisational climate did not feature in partner adaptation outcomes during the absence period but did at all other time points. It appears that partners minimise the organisational influences during the absence period due to beliefs that they cannot influence these, and therefore do not dwell on this. In contrast, partners expressed a desire to have more influence and engagement with the organisation when in the presence of the expeditioner (i.e. at pre-departure, reunion, and reintegration), which may be precipitated by expeditioner behaviours reminding the partner of challenges associated with the experience, and



these behaviours being externalised to the organisational climate in which they are working.

Within the current research, organisational climate was a broad term used to denote aspects of organisational culture, as well as interactions between the individual and the organisation. The importance of organisational climate in achieving positive adaptation has been demonstrated by previous researchers who identified that senior staff (in this case, AAD head office staff and station leaders) play a central role in developing and sustaining empowering environments (Liden, Wayne, & Sparrow, 2000; Paton & Stephens, 1996). They have a major role to play in creating and sustaining a climate of trust and empowerment as a result of their being responsible for translating organizational culture into the day-to-day values and procedures that sustain the schema employees engage to negotiate challenges associated with Antarctic employment. An example of this behaviour identified by multiple participants within the current study related to preferences for authoritative and collaborative leadership practices demonstrated by station leaders which allowed for recognition of individual skills and knowledge.

Leadership practices such as positive reinforcement help create an empowering team environment (Manz & Sims, 1996; Paton, 1994), particularly when they focus on constructive discussion of response problems and how they can be resolved in future from both co-workers and senior staff empowers employees (Quinn & Spreitzer, 1997). Greater use of positive reinforcement may address some of the issues identified by expeditioners in regards to lack of recognition for their knowledge base. It does so by drawing one's emphasis away from personal weaknesses in a difficult or challenging situation and replacing it with an active approach to anticipating how to exercise control in future (Paton & Stephens, 1996). Quality supervisor-subordinate relationships, of which supportive supervisor behaviour is a crucial factor (Liden, Sparrow, & Wayne,

1997), creates the conditions necessary for the personal growth of individuals (Cogliser & Schriesheim, 2000) enhancing general feelings of competence. Additionally, quality supervisor-subordinate relationships encourages the creation of similar value structures between employees (Cogliser & Schriesheim), building shared schema, enabling employees to find increased meaning in their task activities, and contributing to the development of a sense of cohesion and trust between colleagues. Within the current study expeditioners who perceived a positive relationship with the station leader were more likely to report themes consistent with empowerment than those who did not. Positive leaders were also identified as those who nurtured relationships with staff, and were seen to apply organisational policies with

Additionally, findings from the current research suggest that organisational climate extends beyond the employer-employee relationship to encompass those indirectly affected, i.e. partners. Partners too need to be involved in the organisational environment to facilitate effective communication exchange, and facilitate the development of a schema which integrates aspects of the organisation in a meaningful way in order to experience empowerment and positive adaptation throughout the Antarctic employment experience. Furthermore, partner involvement with the organisation may facilitate the development of social support networks directly relevant to their experiences thereby addressing concerns regarding the ability of those to provide support that have not experienced Antarctic employment.

*Social support:* Social support was identified as a factor facilitated by positive relationship dynamics, positive organisational climate, and information sharing/communication. For partners, social support was a predictor of positive adaptation at all time points, except during the absence and reintegration periods. It appears that social support was less accessible during the absence period for partners due to the absence of the expeditioner (who would ordinarily be an important source of

social support) as well as the absence of others whom could readily empathise with their experiences (i.e. other individuals who had experienced, or were experiencing, Antarctic employment), and therefore less of an influence on adaptation outcomes.

At reintegration, it appears that partners have less reliance on the expeditioner as a source of social support (which appears to be associated with enhanced trust in self (self-efficacy) and empowerment developed as a result of the Antarctic experience). It appears that the absence of social support within single and partnered expeditioner at reintegration can be attributed to the same processes. However, at all other assessment occasions social support was a predictor of adaptation for both single and partnered expeditioners alike. Ready access to social support appeared to serve both a supportive and normalising function, with those expeditioners who returned by plane emphasising this to a slightly greater degree at reunion.

Within the present research, social support referred to the provision of support (informal, e.g. collegial, and formal, e.g. EAP) to the participant by external agents. There is an extensive body of evidence that testifies to the importance of quality social support in negotiating challenging experiences. For example, it has been demonstrated that access to social and information resources allows individuals to take initiative and enhance their sense of control (impact) and self-efficacy (competence) over challenges (Gist & Mitchell, 1992; Lin, 1998; Paton, 1994), thereby contributing to feelings of empowerment and engendering positive adaptation (Paton et al., 2008). In turn, provision of social support between colleagues enhances team cohesiveness.

Members of cohesive work teams are more willing to share their knowledge and skills, an essential prerequisite for the development and maintenance of the learning culture that is fundamental to agency and officer resilience (Paton et al.). Furthermore, research has demonstrated that reliance on peer relationships for social support within a

work context contributes to a greater sense of self-determination in work-related tasks (Paton et al.).

The size, cohesiveness, and types of relationships within a social network influence the availability of social support (Wellman & Wortley, 1990). A larger, cohesive social network comprising close interpersonal relationships enables access to more individuals from whom to seek social support (Wellman & Wortley). This is of particular relevance in an Antarctic population where the size of the social network is often reduced: for expeditioners, this results from geographic isolation from pre-existing support networks; for partners, this results from less cohesion with pre-existing support groups due to divergent experiences encountered when comparing those who experience Antarctic employment with those who do not. More generally, availability of and satisfaction with social support resources including partners, family, friends, and work colleagues is associated with lower levels of distress (Dunkel-Schetter & Bennett, 1990; Wethington & Kessler, 1986), and greater adaptation due to collective cognitive convergence (Parunak, et al., 2008).

In particular, the presence of a supportive close or intimate other significantly reduces the negative impacts of stress and challenge experiences (Cohen & Wills, 1985). The process by which this occurs is that those providing social support provide coping assistance (e.g. by helping to reframe the situation), and reassurance that enhances self-esteem, and engenders feelings of mastery and competence (Belle, 1987; Berkman, 1985; Pearlin, 1985; Thoits, 1986). Thus destabilisation in relationship dynamics may be engendered by an absence of social support from an intimate partner (as reported by partners during the absence period).

*Information sharing/communication:* Information sharing/communication was facilitated by ready access to social support as well as positive relationship dynamics and organisational climate. Information sharing/communication was emphasised at

early stages of the Antarctic experience, i.e. at pre-departure it was a predictor of adaptation for all participant categories, as well as within the absence period for single and partnered expeditioners. The process of information sharing/communication facilitated positive adaptation in two ways: 1) greater knowledge and understanding of the situation enabled greater feelings of control and sense of mastery over the situation (factors routinely associated with the development of positive adaptation; Miller & Kaiser, 2001), and 2) facilitating the development of closer relationships with peers, thereby enabling ready access to social support. However, information/communication was not a predictor of adaptation within the partner category beyond the pre-departure period. This may again relate to the degree to which partners can gain information beyond this period.

It was noted by both expeditioners and partners that information sharing/communication quality decreased over the course of the pre-departure and absence periods, with some indicating this was an attempt to avoid conflict associated with challenges engendered by the Antarctic experience. Thus, rather than relying on information sharing/communication partners appeared to redirect their attentions to the broader category of relationship dynamics in regards to adaptation outcomes.

Within the current research, information sharing/communication referred to the degree to which information dissemination occurred between the organisation and the participants (both expeditioners and partners) as well as the degree of information dissemination occurring between expeditioners and partners. Relationships in which quality communication and information sharing occurs has been demonstrated to facilitate empowerment, and thereby adaptation (Walsh, 2006). Sharing of clear information and messages, open empathic emotional sharing, and collaborative problem-solving between both intimate and collegial supports engenders feelings of individual mastery and self-efficacy over challenging situations, increases trust in others

to provide support in response to these situations, and facilitates feelings of empowerment and resultant adaptation (Walsh).

Previous research has further identified that an important resource that plays a pivotal role in predicting empowerment is information sharing (Paton et al., 2008) through creating a sense of clarity regarding the situation (Paton & Flin, 1999) as well as purpose and meaning (Conger & Konungo, 1988) amongst all involved parties. However, information itself is not enough. The social context in which information is received is an equally important determinant of empowerment (Paton et al.). In this context, one aspect of the agency-officer relationship becomes particularly important, and that concerns trust.

*Trust:* Trust was a predictor of positive adaptation for all participant categories at all times points across the Antarctic employment experience. Within the current research findings trust referred to the degree to which participants believed that they had the ability to successfully negotiate the Antarctic employment experience and experience positive outcomes as a result in both the short and long term. It also referred to the belief that both intimate partners and the organisation would support them in this task.

Previous research has determined trust to be an important predictor of the effectiveness of interpersonal relationships (including both intimate and platonic relationships), group processes and organizational relationships (Barker & Camarata, 1998; Herriot, Hirsch & Reilly, 1998), and plays a crucial role in empowering individuals (Paton et al., 2008; Spreitzer & Mishra, 1999). People functioning in trusting, reciprocal relationships are left feeling empowered, and more likely to experience meaning in their work. Trust has been identified as a predictor of people's ability to deal with complex, high risk events (Paton et al., 2008; Siegrist & Cvetkovich, 2000), particularly when relying on others to provide information or assistance.

Trust influences perception of other's motives, their competence and the credibility of the information they provide (Earle, 2004). An individual is more willing to commit to undertaking a challenging task (such as Antarctic employment) when they believe those with whom they must collaborate or work under are competent, dependable, likely to act with integrity (in the present and in the future), and to care for their interests (Dirks, 1999). Organisations functioning with cultures that value openness and trust create opportunities for employees to engage in learning and growth, contributing to the development of adaptive capacity (Barker & Camarata, 1998; Siegrist & Cvetkovich, 2000).

*Empowerment:* For partners, empowerment was an important predictor of positive adaptation during both the absence and reintegration periods. During the absence period empowerment was engendered by increased self-reliance and opportunities that emerged in the expeditioner's absence. At reintegration, empowerment extended beyond individual experiences to encompass relationship dynamics also. The same pattern of results relating to empowerment was identified for both single and partnered expeditioners, with increased self-reliance and unique opportunities being experienced during the absence period and extension to interpersonal interactions at reintegration. Within the current research empowerment was evidenced by participant reports of enhanced competence, the development of new skills-sets, increased self-efficacy, and feelings of personal involvement and control over meaningful outcomes.

Previous researchers have identified that empowerment predicts satisfaction in individuals and teams (Kirkman & Rosen, 1999; Koberg, Boss, Senjem, & Goodman, 1999), which may assist in explaining its relationship to positive adaptation within the current research. However, Paton et al. argued that it is the finding that empowerment has demonstrated strong links to motivating action in conditions of uncertainty (Conger

& Konungo, 1988; Spreitzer, 1997) that renders it capable of providing valuable insights into resilience and adaptation, as well as how these outcomes can be developed and sustained.

Motivational interpretations of empowerment derive from a theoretical perspective that argues that if people have sufficient resources (psychological, social and physical) as well as the capacity to engage them, they will be able to effectively confront challenges presented by events (Conger & Konungo, 1988; Spreitzer, 1997), such as Antarctic employment. In this way, theories of empowerment readily integrate individual, relationship, and organisational factors such as that demonstrated within Figure 16. Conger & Konungo (1988) conceptualise empowerment as an enabling process that facilitates the conditions necessary to effectively confront (i.e., develop meaning and competence) future challenges. Conger and Konungo argue that individual differences in meaning and competence reflect the degree to which the environment (i.e., the organisational climate) enables actions to occur.

Empowerment thus describes a process that uses organizational strategies to remove conditions that foster powerlessness (e.g., organizational hassles) and encourage organisational practices (e.g., organizational and operational uplifts, self-efficacy information, competencies) that develop employees' learned resourcefulness (Johnston & Paton, 2003). Furthermore, Thomas and Velthouse (1990) argue that beliefs about future competence derive from the schema or interpretive frameworks (developed through the enabling process of empowerment) that provide meaning to experiences and build capacity to deal with future challenges.

### *A Model of Adaptation*

The model as presented in Figure 16 shares a number of commonalities with the Stress-Shield model of resilience as proposed by Paton et al. (2008; Figure 1) – explain



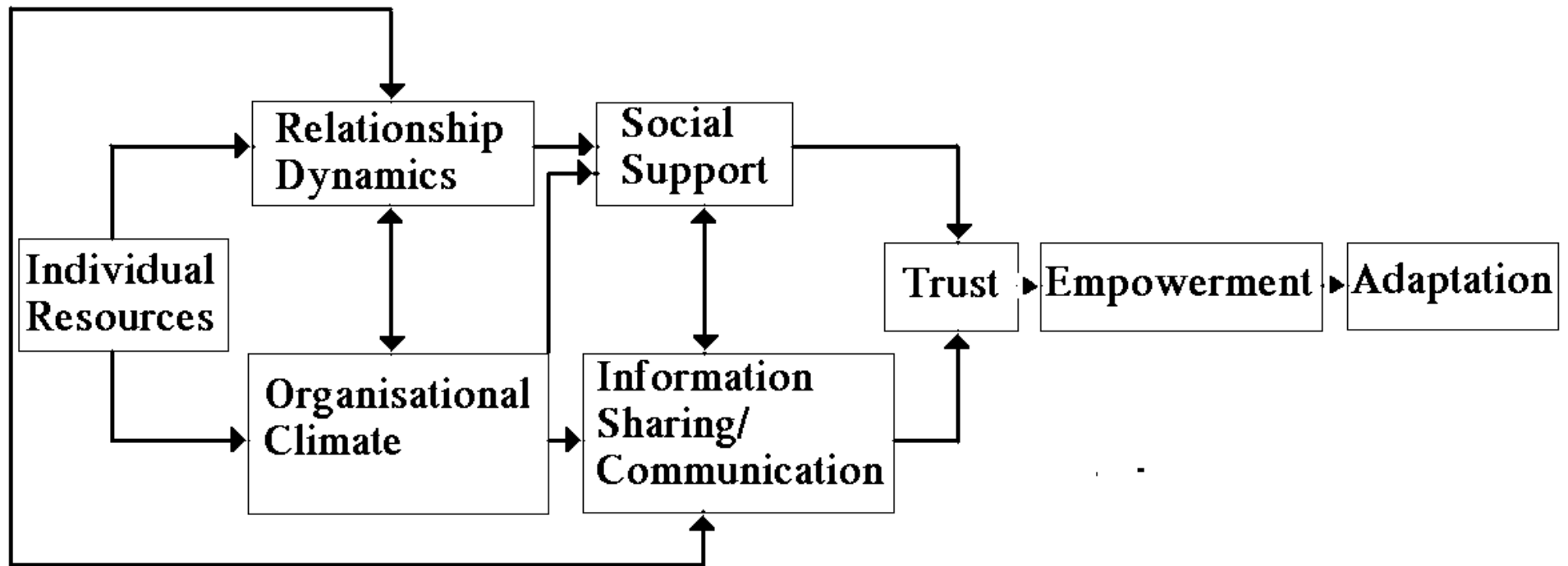
in more detail about the objective of this model and why comparisons are relevant. The Stress-Shield model of resilience (Paton et al.) was developed to explain the processes contributing to resilience in police officers and proposes that resilience reflects the extent to which individuals and the groups to which they belong can capitalise on resources and competencies (both psychological and physical) in ways that allow challenging events to be rendered coherent, manageable, and meaningful (Paton et al.).

As such, this model incorporates organisational, team, and individual perspectives in order to gain a more comprehensive understanding of the resilience process and in this way differs from previous models that focus solely on either individual or organisational factors. Furthermore it acknowledges the contexts in which individuals experience and interpret events and their consequences, and within which future capabilities are nurtured or restricted (Paton, 2006). Similarly, the current model (Figure 16) was developed to explain the processes contributing to resilience and positive adaptation within Antarctic populations and also reflects the importance of capitalising on both individual and group level competencies in order to process, organise, and comprehend challenging experiences in a way that facilitates positive adaptation. Specifically, both models emphasise the multidimensional nature of adaptation by incorporating individual and organisational factors, as well as the influence of trust, the valence of experience (influenced by cognitive constructions of events), and empowerment in facilitating positive adaptation outcomes suggesting that despite differences in the nature of experiences and contexts in which they occur there may be overarching universal factors (e.g. empowerment) which contribute to resilience.

However, the current model (Figure 16) emphasises information sharing/communication and social support to a greater degree than the stress shield model, suggesting differences in underlying processes that facilitate positive adaptation

outcomes as a function of vocational experiences and providing further evidence for the argument that vocationally specific models of adaptation should be developed to ensure provision of appropriate interventions and supports. Additionally, the current model expands upon the Stress-Shield model of resilience to incorporate relationship factors and thereby accommodates the demonstrated influence of relationship dynamics on individual well-being.

By considering both the qualitative and quantitative results of the current study it can be argued that the primary challenges associated with adaptation to Antarctic employment relate to dislocation from existing norms and routines (particularly in terms of interpersonal relationships and the supports that they provide, as well as clarity in roles and expectations) and integration within a new subculture which demands different norms and routines. This dislocation is emphasised by the geographic isolation engendered by the absence period. It also engenders more polarised behaviour as the two different cultures do not have to be simultaneously negotiated. However, upon RTA additional challenges are encountered when having to negotiate between these different roles, and this may explain the decline in functioning during reunion. However, prolonged immersion and social support over a 12-month period allows for improvements in functioning to occur.



*Figure 16.* Mechanisms underpinning psychological adaptation in Antarctic populations.

## 10.2 Limitations and Directions for Future Research

It is acknowledged that as the measures incorporated within the current study required reports of internal states not accessible to anyone other than the respondent, there is an increased possibility that common method bias may have affected the results. However, as one of the processes underlying psychological adaptation is the subjective cognitive interpretations made regarding experiences, it is arguable that use of this method is also a strength of the present research design.

Additionally, the data reported within the present research is confined to expeditioners and partners. Thus it is possible that extraneous influences associated with other relationship types (e.g. parents, siblings, friends, children) may have impacted the nature of experiences, and resultant cognitive constructions of the Antarctic employment experience yet are not specifically reflected in the current model. Future research examining the concurrent influence of each of these types of relationships will assist in determining the degree to which they need to be incorporated within the model of adaptation to Antarctic employment.

Another factor which may have impacted the model development was the omission of incomplete data sets. Although at pre-departure the omitted quantitative responses did not differ from those retained, it is possible that the nature of their experiences influenced their non-completion of the study. In turn, these experiences may have important implications for the development of a comprehensive model of adaptation – for example, it is not clear what the impact of relationship termination during the absence period was on subsequent adaptation during the reunion and reintegration period. It is possible that those partners who withdrew may have experienced more negative adaptation in the short-term due to losses associated with their relationship dissolution. This is argued on the basis that negative relationship dynamics would be associated with reduced access to existing social support networks, information sharing, and trust. In turn, according to the model depicted in Figure

16 (p. 294) this would lead to reduced levels of empowerment and therefore reduced adaptation.

The lack of pre-existing differences on pre-departure quantitative measures between individuals whose relationships later dissolved versus those that were sustained is an interesting finding in itself. It is possible that pre-existing tensions between parties would have been managed using existing coping strategies during the pre-departure period. It would not have been until the absence period that the efficacy/availability of these strategies would have resulted in declined functioning, and social support would arguably have been at its lowest. In this instance, differences would not have emerged until the absence period. In terms of implications for interventions, the lack of pre-departure quantitative differences between these groups suggests that although individuals may benefit from proactive prevention strategies, they may be less likely to undertake these due to a perceived lack of need. In this vein, rather than being optional such strategies need to be incorporated into standard induction and pre-departure training procedures.

In future research, assessing the degree of previous experience in relation to Antarctic employment in terms of either number of trips to Antarctica or length of time spent in Antarctica may enable greater elucidation of how previous experience contributes to adaptation in subsequent Antarctic employment experiences. The dichotomous measurement of Antarctic employment experienced utilised within the present research may have precluded identification of a critical period/amount of previous experience in regards to facilitative contributions to adaptation.

In addition to empirically validating the proposed model demonstrated in Figure 16 through use of structural equation modelling techniques, future research should also examine the cross-cultural applicability of the proposed model in explaining adaptation in Antarctic populations. As the current research was conducted with a Western population which

encourages and rewards individuals (Hofstede, 2001), it is possible that the importance of individual resources in the facilitation of positive adaptation outcomes may be overemphasised relative to collectivist cultures. Thus the generalisability of the model also needs to be tested.

### 10.3 Conclusions and Recommendations

Quantitative results of the current thesis identified that although expeditioners and partners concurrently experienced positive and negative affective states associated with challenges encountered throughout the Antarctic employment experience, distress rarely exceeded levels reported by the normative population. Additionally, at both two and 12 months post return, expeditioners reported significantly higher levels of positive compared to negative change resulting from their experience. At 12 months post-return, partners reported significantly higher levels of positive compared to negative change resulting from their experience. Furthermore, quality of life satisfaction and well-being indices indicated higher levels of functioning being experienced by all participant categories at reintegration compared to pre-departure suggesting that Antarctic employment was beneficial for long-term functioning.

Recognition of the fact that Antarctic employment can result in resilient (adaptive and growth) outcomes for expeditioners and partners alike means that maximising expeditioner performance and well-being, and thereby enhancing employee retention rates, requires that agencies undertaking Antarctic programs have at their disposal a model that they can use to guide the development and maintenance of proactive prevention and intervention strategies to facilitate adaptation. In turn, any model designed for this purpose must acknowledge all factors that influence expeditioner experiences (i.e. individual, relationship, and organisational factors). Furthermore, because some expeditioners and partners will encounter

the challenges associated with Antarctic employment repeatedly, it is important that programs are designed as learning strategies and that any model used to guide this activity must identify the resources and competencies that facilitate the proactive development of a general capacity to adapt (i.e., render any future experience meaningful and manageable) to challenging circumstances.

At present data indicates that approximately 45 percent of expeditioners who participate within the Australian Antarctic program will return for subsequent employment. Although the program regularly receives more employment applications for science personnel than there are positions, there have been increasing difficulties recruiting trade personnel and station doctors (Ayton, 2008, personal communication). Anecdotal evidence indicates that this is due greater financial remuneration being available for undertaking work in alternative remote environments such as within the mining sector (Ayton, 2008, personal communication). However, it would appear from the present data that the interplay between individual, interpersonal, and organisational factors may also influence this decision. For example, it was found that levels of expeditioner dissatisfaction increased when they felt their knowledge and experience was being overlooked. It is arguable that this is more likely to occur for a tradesperson compared to a scientist due to norms regarding 'earning' of respect.

The model proposed in the current thesis (Figure 16) provides a means of achieving this goal. The model was developed by integrating individual models of adaptation derived from single expeditioner, partnered expeditioner, and partner qualitative response profiles at each phase of the Antarctic employment experience (i.e. pre-departure, absence, reunion, and reintegration). This approach increases the expected utility of the model as it encompasses the dynamic processes undertaken to facilitate adaptation throughout the employment experience. The model describes adaptation as resulting from the interaction between individual, relationship, and organisational factors. However, the benefit of any model is a function of it

being theoretically rigorous and capable of informing the design of practical proactive prevention and intervention programs in Antarctic agencies. Thus, the observed correlates between the components of the current model with previous research regarding adaptation and growth further enhance the strength of the developed model.

All model components are amenable to change, potentially through organisational intervention and change strategies. Guidelines for enhancing individual resources, relationship dynamics, and organisational climate, as well as social support, information sharing/communication, trust, and empowerment are available in the literature (Bartone, 2004; Coglisier & Schriesheim, 2000; Herriot et al., 1998; Perry, 1997; Quinn & Spreitzer, 1997). Individual resources such as optimism, self-efficacy, and positive reframing can be facilitated by the development and maintenance of cognitive-behavioural strategies in which the individual actively monitors, assesses, and adapts their thought processes to enhance positive affective outcomes (Butler, Chapman, Forman, & Beck, 2006; Pretzer & Walsh, 2001; Young, Weinberger, & Beck, 2001). These strategies can be integrated within formal intervention programs, although informal interactions with other expeditioners can also facilitate the development of optimism, self-efficacy, and positive reframing by providing an avenue for discussion and normalising of experiences. In turn, this emphasises the importance of information sharing and communication from both a theoretical and practical perspective.

The emphasis on information sharing and communication demonstrated within all participant categories would suggest that positive relationship dynamics can be enhanced through basic communication training (Newman, 1981), which would also facilitate the information sharing/communication and social support components of the model. At present, pre-departure training programs utilised within the Australian Antarctic program promote the development of collegial relationships thereby providing opportunities for information sharing and communication to occur. However, expeditioners identified that they felt the



level of information sharing provided by the organisation declined over the course of the Antarctic employment experience.

It would appear that satisfaction with information sharing and communication at the collegial level remained adequate and valued, however at times expeditioners perceive that inadequate information was provided by the broader organisation (which they attribute as those individuals in higher positions of authority), particularly in terms of changing departure and return dates. Partners too expressed some level of dissatisfaction with the degree of information sharing being generated from the organisation, with some indicating that this negatively influenced their ability to prepare for and adapt to each stage of the Antarctic employment experience.

Positive organisational climate can be facilitated by assisting expeditioners to develop a sense of coherence (i.e. meaning) regarding their experiences. This can be encouraged by promoting a sense of cohesion between the organisation and staff, staff and their families, and the organisation and families. The positive benefits of cohesion emerge when organisational climates and practices legitimise emotional expression and promote self-help activities (Paton, 2003) for those individuals both directly (i.e. expeditioners) and indirectly (i.e. partners) involved in the experience. Formal and informal activities in which the individual gains a sense of mastery over their experiences are more likely to engender empowerment, an important predictor of positive adaptation.

It would also appear that within the current population of expeditioners, organisational climate is viewed more positively when they feel they can actively contribute to and shape organisational experiences. It is also possible that the knowledge and experiences expeditioners can bring to the organisation may facilitate the refinement of existing practices, thereby enhancing efficiency and employee satisfaction. In this way,

organisational practices are viewed as dynamic and therefore less restrictive; factors which may further enhance positive adaptation experiences.

Trust is assumed to develop gradually over time based on direct personal interaction and communication and relates to the properties of the trustor, the attributes of the trustee, and the risk associated with the situation (Mayer, Davis, & Shoorman, 1995). The extent to which a person is willing to trust another person is affected by the trustor's propensity to trust and the trustor's perceptions of the trustee's trustworthiness. The accumulated knowledge about others' capabilities, values, and behaviours through interaction allows an individual to base trust on cognitive assessment or affective response (Lewicki & Bunker, 1996; Lewis & Weigart, 1985; Williams, 2001).

Trust associated with close personal relationships (such as long-term friendships and intimate relationships) is relatively resilient and durable (Lewicki & Bunker, 1996; McAllister, 1995). This type of trust, once developed, is not easily disrupted, but once shattered, it is not easily restored (Lewicki & Bunker; Meyerson, Weick, & Kramer, 1996). In contrast, trust engendered under situations of risk or challenge is more easily conferred and withdrawn (Lewicki & Bunker; McKnight, Cummings, & Chervany, 1998; Meyerson et al.). Although the reliance on past personal experience in similar situations or on general social norms and perceptions allows rapid development of trust, when applied to a specific interaction context, it is often prone to error. Lacking the personal knowledge as the basis for forming proper expectations, trust is superficial. Even minor violations (either subjective or objective) could easily lead to distrust (Lewicki & Bunker).

To shift trust from a more fragile form to a more robust form, organisations should provide opportunities for accumulating personal knowledge among the parties (Meyerson et al., 1996). Strategies to manage trust fragility, should reduce the level of perceived risk by

providing additional insurances, and at the same time, shift trust to a more robust form by allowing personal knowledge accumulation through positive experience (Hung et al., 2004).

When the factors associated with individual resources, relationship dynamics, organisational climate, social support, information sharing/communication and trust are addressed a sense of mastery and resultant empowerment is engendered. Additionally, psychoeducation should also be incorporated at each level of intervention to assist in normalising the experience, thereby engendering feelings of mastery and empowerment.

The ability to intervene to enhance each of the proposed model (Figure 16) components confers upon the model both theoretical rigor and practical utility and provides important insights into the ability of expeditioners and partners alike to experience positive adaptation outcomes associated with Antarctic employment. Furthermore, having identified the interactive influences of individual, relationship, and organisational factors provides a foundation for future research to mobilise and capitalise on these resources to effect enhanced functioning across multiple domains, further enhancing the expeditioner's capacity to undertake and successfully negotiate the challenges associated with Antarctic employment. In turn, the enhanced performance and satisfaction engendered by this is likely to enhance employee retention, thereby providing a more experienced and effective Antarctic workforce who are able to work independently and autonomously, with fewer training requirements.

From a pragmatic perspective, this represents financial savings associated with reduced training requirements as well as increased likelihood of successfully completing scheduled programs (both research and construction) due to an enhanced ability to anticipate and negotiate future challenges.

Prior to the data reported in this thesis, existing research has been unable to adequately account for the positive adaptation and outcomes seemingly facilitated by Antarctic employment experiences. The current research has identified the multidimensional

(i.e. individual, relationship, and organisational) mechanisms underpinning adaptation within Antarctic expeditioners and partners, and in doing so has provided insights into malleable factors which can be targeted for intervention to enhance positive outcomes. Thus it would appear that previous research has adopted too narrow a focus (i.e. reflecting a concentration on primarily individual and, to a lesser degree, organisational factors as well as overlooking the periods prior and subsequent to the absence period) when investigating the Antarctic employment experience and associated sequelae.

The results of the current study demonstrate interrelationships between each stage of the Antarctic employment experience in influencing adaptation processes. In particular, it should be noted that predictors of positive and negative change at reunion included pre-departure, absence, and reunion experiences. In contrast, predictors of positive and negative change reported at reintegration primarily related to pre-departure and reunion experiences, as opposed to time “on the ice”. This suggests that although multiple factors influence adaptation, post-return the importance of “on ice” factors declines and instead is replaced by context relevant factors (i.e. factors that influence the current environment, such as relationship dynamics). In this respect, the hypothesised interplay between all phases of the employment experience is not supported. Instead, it appears that pre-departure experiences are sufficiently influential to impact experiences at all other assessment points thereby warranting intervention strategies to be implemented at this time. In turn, experiences appear to be more likely to be influenced by those encountered in the immediately preceding phase of employment (e.g. reunion experiences were influenced by absence experiences, reintegration experiences were influenced by reunion experiences).

Whilst research in this field continues to be restricted to the individual and organisation, and interventions implemented targeting only these factors, efforts to enhance

expeditioner and organisational performance will be undermined and rendered inadequate as an important influence on these experiences (relationship dynamics) are ignored.

Acknowledging factors beyond the individual to include both relationship dynamics and organisational climate as part of the employment experience is critical (Haque & Etkin, 2007; Pandey & Okazaki, 2005). This is because individual lives and the people who exist in their different levels of community (i.e. relationship and organisational) life are intricately connected and the ability of Antarctic communities to develop resilience and adaptive capacity in response to challenges associated with such employment helps contribute significantly to people's ability to sustain resilience (Dalton, Elias, & Wandersman, 2001). The context in which people construe meaning from hazard information and interpret their risk is one characterised by people's experiences and beliefs, and shaped by an individual's relationships with others in their community (Paton et al., 2008). In addition, people seek out others (i.e. colleagues) to acquire information and resources that will diminish their uncertainty and help reinforce their preparedness (Paton, Smith, Daly, & Johnston, 2008). In this way, the availability of social support networks as well as the individual's ability to engage with these and utilise the support being offered is critically important. Therefore strategies that seek to enhance people's resilience and preparedness must astutely consider the relationships an individual has with their community and people's need to interact with those who share similar beliefs, values, and expectations (Paton et al., 2008).

### *Specific Recommendations for the Australian Antarctic Program*

The Australian Antarctic Division already has the requisite structures in place to integrate and address individual, relationship, and organisational factors within preparatory an ongoing intervention programs through the Expeditioner Training and Family Liaison Officer (ETFLO). Expansion of this role to accommodate the increased demands that would

be engendered should recommendations of this thesis (in terms of enhancing model components) be implemented, and consideration of employing an individual not directly affiliated with the AAD may also assist in addressing concerns identified by participants regarding the potential impact of utilising formal supports on their future employment opportunities. At present other Antarctic Treaty signatories (e.g. America, France, and New Zealand) contract an independent psychologist to provide support and interventions to expeditioners whilst working in Antarctica. It is possible that a similar strategy may be of benefit within the Australian program. This position would not supersede that of the ETFLO, but instead supplement this so that expeditioners and partners did not feel reluctant in accessing supports should they negatively impact future employment opportunities.

Introduction of air-based personnel movement does not appear to significantly detrimentally impact expeditioner functioning as evidenced by non-significant differences between quantitative profiles between expeditioners who travel by ship and those that travel by plane. However, it was identified that expeditioners who travelled by plane reported lower levels of well-being at reunion compared to those who did not. Similarly, it was highlighted that these individuals felt somewhat isolated from colleagues who travelled by ship which may limit social integration and access to supports whilst in Antarctica. Additionally, the reduced time in which to cognitively integrate experiences and prepare for reunion was identified as a further stressor that these individuals were required to negotiate.

Strategies to ensure social integration whilst on station are paramount. These will require information sharing and collaborative practices to achieve group goals. Ideally, these strategies should occur during pre-departure training so that they are members of this subculture prior to departure thereby minimising group differences that are currently occurring as a function of transportation methods.

Additionally, strategies to facilitate efficient cognitive processing of experiences and enable preparation for subsequent stages of the employment experience (e.g. reunion, the period identified as most challenging) are warranted, particularly for those personnel travelling by plane. At present wintering expeditioners are required to debrief with an Army psychologist prior to RTA in order to inform performance evaluations and allow for discussion of challenges or concerns identified by the expeditioner.

However, as it has been identified within the present study that cognitive interpretations of events (as opposed to length of stay) is a more important predictor of adaptation it is arguable that such supports should not be restricted to nor enforced upon wintering expeditioners. This is particularly important considering evidence that single-session psychological debriefing is not effective in reducing negative symptoms and should not be compulsory (Rose, et al., 2003). Instead, it is argued that expeditioners could be provided with a checklist of issues and strategies to consider prior to RTA. They could then access targeted intervention with a psychologist to assist in developing these skills if required. This approach is more consistent with a salutogenic perspective that emphasises individual strengths rather than a deficit-focused debriefing approach. A further consideration is that some expeditioners identified reluctance to engage with the Army psychologist due to concerns it would negatively impact future employment prospects (which mirrors concerns associated with ETFLO engagement).

Partners within the current study expressed a desire to have greater interactions with the organisation in order to enhance feelings of 'belongingness' and support, thereby facilitating more positive growth experiences. Methods to achieve this may include including partners within appropriate pre-departure and post-return briefing sessions with expeditioners. In this way a shared understanding is more likely to be developed, which in turn is likely to promote similarities in schema and reduce discrepancies in expectations

between expeditioners and partners. A further consideration would be to facilitate greater interactions between partners who are otherwise isolated from one another, and therefore have access to fewer experiences that can help normalise (and thereby manage) their experiences. One method to achieve this may be to provide access to an online discussion forum, blog site, or SKYPE networking.

A focus on enhancing expeditioner well-being and performance is important not only in regards to duty of care, but also facilitating long-term staffing of research programs currently being undertaken in the Antarctic environment. Considering that these research programs have global significance (particularly in terms of mapping global climate change, weather patterns, and marine ecology), and have been identified as an analogue for experiences in space (particularly considering planned longer-duration manned space flights) the importance of the current research findings cannot be underestimated.



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**APPENDIX A**  
**Participant Information Sheet**



**Australian Government**

**Department of the Environment and Heritage**  
Australian Antarctic Division

## **Expeditioner and family reintegration:**

### **Comparing ship-based and air-based personnel movement.**

#### **Information Sheet**

You are invited to participate in this study which is to be conducted by Prof Douglas Paton and Kimberley Norris (University of Tasmania) and Dr Jeff Ayton (AAD). This information sheet is to tell you more about the study and to help you decide whether you wish to take part.

#### **Purpose of the study:**

The aims of the project are to:

1. Identify factors that promote psychological adaptation and resilience in Antarctic expeditioners and describe their relationship to positive and negative change arising from the expedition experience,
2. Identify factors that promote psychological adaptation and resilience in Antarctic expeditioners' families, and describe their relationship to positive and negative change arising from the separation experience,
3. Describe the quality and nature of the reintegration experience by comparing the processes and outcomes of each of the above and their implications for the process of reintegration over a 12 month period.

#### **Procedures involved (including frequency):**

**Stage One.** Information will be collected from interviews with previous expeditioners and their partners. These data will be used to develop structured diaries, which will be distributed to expeditioners and their partners during the expedition and separation stage (Stage Three). This stage has already occurred.

**Stage Two** will occur during the pre-departure and training stage. A number of questionnaires measuring personal resilience, family activities, and well-being will be administered at this stage to both expeditioners and partners. Questionnaires will take approximately forty (40) minutes to complete and can be returned using a reply paid envelope or alternatively completed online. Information collected during the selection process may also be used in the project, with the consent of the expeditioners.

**Stage Three** of this project occurs during the expedition itself. It involves completing a structured diary with a checklist format on a monthly basis, during the course of the expedition and separation experience. This approach to data collection is designed to minimise demands on participants.

**Stage Four** occurs during the debriefing process on the return voyage for personnel returning via ship-based transport or alternatively, immediately prior to departure from the Antarctic or immediately upon return to Australia for personnel returning via air-

based transport. These data will involve the completion of standardised debriefing reporting forms by expeditioners. Partners will be invited to complete similar forms.

**Stage Five** of this project will occur approximately two months following the expeditioners' return to Australia. Questionnaires that were previously administered will be readministered to expeditioners and partners. They will take approximately forty (40) minutes to complete and can be returned using a reply paid envelope or alternatively completed online.

In addition, an interview will be conducted with consenting expeditioners and partners either face-to-face or via telephone arranged at a convenient time. This will take approximately forty (40) minutes to complete.

**Stage Six** of this project is the final stage of data collection and it will occur approximately twelve months following the expeditioners' return to Australia. During this stage, the questionnaires measuring personal resilience, family functioning, and well-being will be readministered to expeditioners and partners.

A follow-up interview will also be conducted with those interviewed the previous year. The interview should take approximately forty (40) minutes to complete and can be conducted either face-to-face or via telephone.

### **Selection of subjects**

Individuals selected for employment with the Australian Antarctic Division (AAD) as an expedition member will be invited to participate in the research project. Participants will be sought from male and female expeditioners who will be away from Australia for three months or longer, regardless of age or occupation. Participation is sought from expeditioners who are and who are not currently involved in a romantic relationship. Where applicable, participation will also be sought from the expeditioners' partner. With the repeated measures design participants will act as their own controls and expeditioners without partners will act as a comparison group. As yet, no studies have conducted parallel analyses of Antarctic expeditioners and their families over a time frame long enough to examine change and adaptation and that affords opportunity to systematically examine precursors of positive adaptation. This will be included in the present study and has implications for the manner in which the reintegration is managed and for the shift from ship-based to air-based transportation arrangements.

### **Possible side effects:**

No significant physical effects (e.g. physical harm, pain or discomfort) or psychological effects (e.g. emotional distress, anxiety, or embarrassment), beyond the normal experience of everyday life are expected. Furthermore, the information obtained during the course of the study is not considered to be prejudicial to participants in any manner, that is, there are no employment, social, or legal implications from participating in the research.

No information that could identify any individual participant will be published or disclosed to any person or organization, including the Australian Antarctic Division. Your anonymity will be protected by our procedure in which names are removed and replaced by code numbers, and only the combined results of all participants will be published. Furthermore, all raw data will be stored securely in the School of Psychology at the University of Tasmania.

### **Ethical considerations:**



If you decide to participate in this study you are free to withdraw your consent and discontinue at any time. In every aspect of this treatment your best interests will always come first.

This study has been approved the Australian Antarctic Division Ethics Committee (Human Experimentation) and the Southern Tasmanian Human Research Ethics Committee.

Should you have any concerns of an ethical nature or complaints about the manner in which this research is conducted, please do not hesitate to contact the Chair or Executive Officer of the Tasmanian Social Sciences Human Research Ethics Committee:

Chair:	A/Prof Gino Dal Pont	(03) 6226 2078
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Executive Officer:	Amanda McAully	(03) 6226 2763
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Alternatively, you may contact the Chair or Secretary of the Australian Antarctic Division Ethics Committee:

Chair:	Prof Raymond Lowenthal	(03) 6222 8157
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Secretary:	Ian Hawkins	(03) 6232 3209
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If you have any queries about the project or would like to participate, please feel free to contact the researchers directly by calling Prof Douglas Paton on (03) 6342 3193 (email: [Douglas.Paton@utas.edu.au](mailto:Douglas.Paton@utas.edu.au)) or Kimberley Norris on 0438 364 583 (email: [kbaker0@utas.edu.au](mailto:kbaker0@utas.edu.au)).

Thank you

**APPENDIX B**  
**Participant Consent Forms**



**Australian Government**  
**Department of the Environment and Heritage**  
Australian Antarctic Division

## **CONSENT FORM FOR EXPEDITIONERS**

### **Antarctic expeditioner and family reintegration:**

#### **Comparing ship-based and air-based personnel movement**

1. The reasons for the study, what it will involve, and the possible effects of the study have been explained to me.
2. I understand that this research is being conducted to obtain an understanding of the positive and negative outcomes commonly experienced during the separation and reintegration experience.
3. I agree that the information gathered for the study may be published provided that I cannot be identified as a participant. I also understand that while audiotapes will be used to record the interview, my anonymity will be assured as it is not necessary to record my name or any other identifying information. No identifying information will be included within the structured diaries.
4. I understand that all research data will be securely stored in the School of Psychology (Launceston), University of Tasmania premises for a period of five years. The tapes and the data will be destroyed at the end of five years.
5. I understand that participation in this study will not effect my employment, nor will the Australian Antarctic Division have access to data which would identify me individually.
6. I understand that no psychological distress or inconvenience beyond the normal experience of everyday life is expected.
7. Any questions that I have asked have been answered to my satisfaction.
8. I agree to participate in the interview sessions and understand that my participation is voluntary and that I may withdraw at any time without being penalised or disadvantaged in any way.

Name of participant (please print):.....

Signature of participant:.....Date:.....

Postal address:.....

Email:.....Contact Number:.....

I have explained this project and the implications of participation in it to this volunteer and I believe that the consent is informed and that they understand the implications of participation.

Name of Investigator:.....

Signature of Investigator:.....Date:.....



**Australian Government**

**Department of the Environment and Heritage**  
Australian Antarctic Division

## **CONSENT FORM FOR PARTNERS**

### **Antarctic expeditioner and family reintegration:**

#### **Comparing ship-based and air-based personnel movement**

1. The reasons for the study, what it will involve, and the possible effects of the study have been explained to me.
2. I understand that the research is being conducted to obtain an understanding of the positive and negative outcomes commonly experienced during the separation and reintegration experience.
3. I agree that the information gathered for the study may be published provided that I cannot be identified as a participant. I also understand that while audiotapes will be used to record the interview, my anonymity will be assured as it is not necessary to record my name or any other identifying information. No identifying information will be included within the structured diaries.
4. I understand that all research data will be securely stored in the School of Psychology (Launceston), University of Tasmania premises for a period of five years. The tapes and the data will be destroyed at the end of five years.
5. I understand that participation in this study will not effect my partner's employment, nor will the Australian Antarctic Division have access to data which would identify me individually.
6. I understand that no psychological distress or inconvenience beyond the normal experience of everyday life is expected.
7. Any questions that I have asked have been answered to my satisfaction.
8. I agree to participate in the interview sessions and understand that my participation is voluntary and that I may withdraw at any time, without myself or my partner being penalised or disadvantaged in any way.

Name of participant (please print):.....

Signature of participant:.....Date:.....

Postal address:.....

Email:.....Contact Number:.....

Name of partner (please print):.....

I have explained this project and the implications of participation in it to this volunteer and I believe that the consent is informed and that they understand the implications of participation.

Name of Investigator:.....

Signature of Investigator:.....Date:.....

APPENDIX C  
Participant Demographic Questionnaire

Demographic Information

Age.....

Sex.....

Occupation.....

Length of current relationship (*If applicable*) .....

Station.....

Previous Antarctic deployment      Y /N

Job immediately previous to Antarctic employment.....

**APPENDIX D**  
**Modified Family Functioning Style Scale**

## Modified Family Functioning Style Scale

### Relationship Functioning Style Scale

Please read each statement, and then circle the response which is most true for your relationship.

Please give your honest opinions and feelings. Remember that your relationship will not be like all the statements.

How is your relationship like the following statements?

	Not at all			Almost always	
We make personal sacrifices if they help our relationship	1	2	3	4	5
We usually agree about how people in relationships should behave	1	2	3	4	5
We believe that something good always comes out of even the worst situations	1	2	3	4	5
We take pride in the smallest accomplishments of each other	1	2	3	4	5
We share our concerns and feelings in useful ways	1	2	3	4	5
We stick together no matter how difficult things get	1	2	3	4	5
We usually ask for help from persons outside our relationship if we cannot do things ourselves	1	2	3	4	5
We usually agree about the things that are important to our relationship	1	2	3	4	5
We are always willing to 'pitch in' and help each other	1	2	3	4	5



	Not at all			Almost always	
We find things to do that keep our minds off our worries when something upsetting is beyond our control	1	2	3	4	5
We try to look ‘at the bright side of things’ no matter what happens in our relationship	1	2	3	4	5
We find time to be together even with our busy schedules	1	2	3	4	5
We understand the ‘rules’ about acceptable ways to act	1	2	3	4	5
Friends and relatives are always willing to help whenever we have a problem or crisis	1	2	3	4	5
We are able to make decisions about what to do when we have problems or concerns	1	2	3	4	5
We enjoy time together even if it is doing household chores	1	2	3	4	5
We try to forget our problems or concerns for a while when they seem overwhelming	1	2	3	4	5
We listen to ‘both sides of the story’ during a disagreement	1	2	3	4	5
We make time to get things done that we agree are important	1	2	3	4	5
We can depend on the support of each other whenever something goes wrong	1	2	3	4	5

	Not			Almost	
	at all			always	
We usually talk about the different ways we deal with problems and concerns	1	2	3	4	5
Our relationship will outlast our material possessions	1	2	3	4	5
We make decisions like moving or changing jobs for the good of us both	1	2	3	4	5
We can depend upon each other to help out when something unexpected happens	1	2	3	4	5
We try not to take each other for granted	1	2	3	4	5
We try to solve our problems first before asking others to help	1	2	3	4	5

APPENDIX E  
Pre-Departure Interview Schedules for Expeditioners and Partners

## INTERVIEW SCHEDULE FOR ANTARCTIC EXPEDITIONERS

### Pre-expedition

1. What was your partner/family/friends reaction to your application to go to the Antarctic?
2. What were the initial attractions of working in the Antarctic for you?
3. Describe the positive aspects of the pre-expedition period.
4. Describe the negative aspects of the pre-expedition period.
5. What feelings and emotions did you commonly experience during the pre-expedition period?
6. What was the least stressful aspect during this time?
7. What was the most stressful aspect for you prior to your departure?
8. What factors helped you to cope prior to your departure?
9. What factors do you believe helped your partner/family/friends to cope during this time?
10. What social support did you access during this period?
11. How would you describe your relationship with your partner/family/friends during this period?
12. What changes did you notice in your relationships with your partner/family/friends during this period?
13. How did your normal roles change during this period?
14. What was your perception of, or attitude towards, the pre-expedition period?
15. What changes have you noticed in yourself during this period?
16. Did you notice any changes in sociability in your partner/family/friends during this period?
17. Describe any changes you noticed in your own work habits.

## INTERVIEW SCHEDULE FOR PARTNERS

### Pre-expedition

1. What was your reaction to your partner's application to go to the Antarctic?
2. Describe the positive aspects of the pre-expedition period.
3. Describe the negative aspects of the pre-expedition period.
4. What feelings and emotions did you commonly experience during the pre-expedition period?
5. What was the least stressful aspect during this time?
6. What was the most stressful aspect for you prior to your departure?
7. What factors helped you to cope prior to your departure?
8. What factors do you believe helped your partner to cope during this time?
9. What social support did you access during this period?
10. How would you describe your relationship with your partner during this period?
11. What changes did you notice in your relationship with your partner during this period?
12. How did your normal roles change during this period?
13. What was your perception of, or attitude towards, the pre-expedition period?
14. What changes have you noticed in yourself during this period?
15. Did you notice any changes in sociability in your partner during this period?
16. Describe any changes you noticed in your partner's work habits.
17. Describe any changes you noticed in your own work habits.

APPENDIX F  
Stepwise Regression Equations Predicting Quality of Life Satisfaction at Pre-Departure  
for Single Expeditioners, Partnered Expeditioners, and Partners.

Table 34

*Stepwise Regression Analyses of Factors Predicting Quality of Life (WHOQOL-BREF)**Indices for Single Expeditioners*

Dependent variable	Independent variable	Beta	SE	<i>p</i> value	Adjusted R <sup>2</sup>
Physical Domain	FFSS Problem Solving	3.37	.74	<.001	.21
	COPE Humour	1.84	.55	<.001	
	FFSS Balance	-1.97	.80	<.05	
	External WIF	-1.18	.40	<.01	
	External FIW	1.57	.71	<.05	
Psychological Domain	LOT-R	1.52	.30	<.001	.35
	FFSS Expectations	-2.97	.74	<.001	
	FFSS Appreciate	2.58	.65	<.001	
	COPE Suppression	1.32	.42	<.01	
	COPE BD	1.02	.44	<.05	
	PGI	.32	.16	<.05	
Relationship Domain	FFSS Cope II	2.40	.87	<.01	.09
	COPE Planning	1.55	.64	<.05	
Environment Domain	COPE Suppression	1.45	.42	<.001	.18
	COPE Restraint	-1.24	.39	<.01	
	COPE MD	1.91	.51	<.001	
	COPE AD	-.92	.40	<.05	
	External WIF	-.56	.27	<.05	

Note: External WIF = External Work Interference with Family; External FIW = External Family Interference with Work; LOT-R = Life Orientation Test-Revised; COPE BD = COPE Behavioural Disengagement; PGI = Personal Growth Initiative; FFSS Cope II = social support coping; COPE MD = COPE mental disengagement; COPE AD = COPE alcohol and drug use.

Table 35

*Stepwise Regression Analyses of Factors Predicting Quality of Life (WHOQOL-BREF)**Indices for Partnered Expeditioners*

Dependent variable	Independent variable	Beta	SE	<i>p</i> value	Adjusted R <sup>2</sup>
Physical Domain	FFSS Communication	2.07	.58	<.001	.09
	PGI	.31	.12	.01	
	COPE BD	.83	.39	.03	
	COPE Humour	-.79	.39	.04	
Psychological Domain	COPE Suppression	1.31	.29	<.001	.13
	COPE Active	-1.22	.35	.001	
	LOT-R	.62	.18	<.001	
	PGI	.27	.11	.01	
	FFSS Cope I	1.12	.44	.01	
Relationship Domain	COPE P&G	2.21	.54	<.001	.18
	FFSS Cope II	3.44	.82	<.001	
	COPE Humour	-1.69	.53	<.01	
	FFSS Balance	-2.11	.85	.01	
	External FIW	1.15	.52	.03	
Environment Domain	External WIF	-.74	.23	<.01	.07
	COPE MD	.70	.29	.02	

Note: PGI = Personal Growth Initiative; COPE BD = COPE behavioural disengagement; LOT-R = Life Orientation Test-Revised; FFSS Cope 1 = avoidance coping; COPE P&G= COPE positive reinterpretation and growth; External FIW = External Family Interference with Work; External WIF= External Work Interference with Family; COPE MD= COPE mental disengagement.

Table 36

*Stepwise Regression Analyses of Factors Predicting Quality of Life (WHOQOL-BREF)**Indices for Partners*

Dependent variable	Independent variable	Beta	SE	<i>p</i> value	Adjusted R <sup>2</sup>
Physical Domain	FFSS Flexibility	-9.75	.71	<.001	.81
	FFSS Positivism	7.01	.51	<.001	
	PGI	.82	.08	<.001	
	COPE ESS	2.32	.29	<.001	
	COPE Humour	2.73	.37	<.001	
	FFSS Purpose	2.37	.54	<.001	
	FFSS Problem Solving	3.73	.87	<.001	
Psychological Domain	PGI	.65	.07	<.001	.87
	COPE Suppression	2.09	.30	<.001	
	COPE MD	4.29	.38	<.001	
	FFSS Positivism	4.84	.49	<.001	
	FFSS Problem Solving	9.84	.45	<.001	
	COPE Denial	-3.59	.35	<.001	
	Internal FIW	-3.49	.30	<.001	
	LOT-R	1.77	.18	<.001	
	FFSS Cope I	-5.59	.72	<.001	
	COPE BD	2.56	.50	<.001	
	FFSS Appreciation	3.30	.61	<.001	
	COPE Planning	1.40	.36	<.001	
	FFSS Communication	-1.27	.46	<.01	
Relationship Domain	FFSS Commitment	-12.27	.36	<.001	.96
	FFSS Cope II	3.43	.22	<.001	
	COPE Denial	3.32	.12	<.001	



	COPE F&V	-4.56	.27	<.001	
	COPE Suppression	2.13	.16	<.001	
	COPE MD	1.19	.10	<.001	
	FFSS Cope I	-2.56	.21	<.001	
	COPE ESS	.83	.12	<.001	
	PGI	.33	.03	<.001	
	External WIF	.72	.07	<.001	
	LOT-R	.42	.06	<.001	
Environment Domain	PGI	1.09	.03	<.001	.95
	COPE Acceptance	2.16	.14	<.001	
	FFSS Balance	-3.16	.21	<.001	
	FFSS Positivism	3.68	.24	<.001	
	FFSS Commitment	-6.39	.33	<.001	
	COPE ESS	1.76	.12	<.001	
	COPE Active	-1.45	.15	<.001	
	External WIF	.74	.09	<.001	

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Note: PGI = Personal Growth Initiative; COPE ESS = COPE emotional social support; COPE BD = COPE behavioural disengagement; LOT-R = Life Orientation Test-Revised; FFSS Cope 1 = avoidance coping; COPE P&G= COPE positive reinterpretation and growth; External FIW = External Family Interference with Work; External WIF= External Work Interference with Family; COPE MD= COPE mental disengagement.

APPENDIX G  
Stepwise Regression Equations Predicting Well-Being at Pre-Departure for Single  
Expeditioners, Partnered Expeditioners, and Partners.

Table 37

*Stepwise Regression Analyses of Factors Predicting Well-Being (HSCL-21) Indices for Single Expeditioners*

Dependent variable	Independent variable	Beta	SE	<i>p</i> value	Adjusted R <sup>2</sup>
SD	-	-	-	-	-
PD	COPE ESS	.20	.08	.02	.03
GFD	COPE Plan	.53	.15	<.001	.10
	COPE BD	.41	.15	.01	
	WFE	-.23	.10	.02	
Total	COPE ISS	.60	.22	.01	.05
	FFSS flexibility	-.86	.42	.04	

*Note:* SD = Somatic Distress; PD=Performance Difficulties; GFD = General Feelings of Distress; Total= Total Distress; COPE ESS= COPE Emotional Social Support; COPE BD = COPE Behavioural Disengagement; WFE = External Work Interference with Family; COPE ISS = COPE Instrumental Social Support.

Table 38

*Stepwise Regression Analyses of Factors Predicting Well-Being (HSCL-21) Indices for Partnered Expeditioners*

Dependent variable	Independent variable	Beta	SE	<i>p</i> value	Adjusted R <sup>2</sup>
SD	FFSS Cope 1	-.02	.01	.02	.02
PD	COPE Religion	-.18	.07	.01	.03
	External FIW	.20	.09	.02	
GFD	COPE BD	-.19	.08	.02	.04
	COPE Acceptance	-.19	.08	.02	
	External FIW	.16	.08	.04	
Total	External FIW	.44	.18	.01	.05
	COPE Religion	-.36	.18	.03	
	COPE Acceptance	-.55	.26	.04	

*Note:* SD = Somatic Distress; PD=Performance Difficulties; GFD = General Feelings of Distress; Total= Total Distress; FFSS Cope 1 = avoidance coping; External FIW = External Family Interference with Work; COPE BD = Behavioural Disengagement.

Table 39

*Stepwise Regression Analyses of Factors Predicting Well-Being (HSCL-21) Indices for Partners*

Dependent variable	Independent variable	Beta	SE	<i>p</i> value	
Adjusted		R <sup>2</sup>			
SD	-	-	-	-	-
PD	-	-	-	-	-
GFD	-	-	-	-	-
Total	-	-	-	-	-

Note: SD = Somatic Distress; PD=Performance Difficulties; GFD = General Feelings of Distress; Total= Total Distress

**APPENDIX H**  
**Reunion Interview Schedules for Expeditioners and Partners**

## INTERVIEW SCHEDULE FOR EXPEDITIONERS

### Post-expedition (2 months post-RTA)

1. Describe the positive aspects of the post-expedition period.
2. Describe the negative aspects of the post-expedition period.
3. What feelings and emotions did you commonly experience during the post-expedition period?
4. What was the least stressful time for you during this period?
5. What was the most stressful issue for you following your return home?
6. What factors helped you to cope following your return?
7. What factors do you believe helped your partner/family/friends to cope during this time?
8. What social supports did you access during this period?
9. How would you describe your relationship with your partner/family/friends during this period?
10. What changes did you notice in your relationship with your partner/family/friends during this period?
11. How did your normal roles and routines change during this period?
12. What was your perception of or attitudes towards, the post-expedition experience?
13. What changes in sociability have you noticed in yourself during this period?
14. What changes in sociability have you noticed in your partner/family/friends during this period?
15. Describe any changes you have noticed in your own work habits.
16. How would you describe your general level of satisfaction with your time at the Antarctic?
17. What assistance was available to you from your primary employer following your return home?
18. What assistance did you require after returning home?
19. Would you consider applying to go to the Antarctic again?
20. Do you think the introduction of air-based personnel movement is a positive or negative development? Why?

## INTERVIEW SCHEDULE FOR PARTNERS

### Post-expedition (2 months post- RTA)

1. Describe the positive aspects of the post-expedition period.
2. Describe the negative aspects of the post-expedition period.
3. What feelings and emotions did you commonly experience during the post-expedition period?
4. What was the least stressful time for you during this period?
5. What was the most stressful issue for you following your partner's return home?
6. What factors helped you to cope following your partner's return?
7. What factors do you believe helped your partner to cope during this time?
8. What social supports did you access during this period?
9. How would you describe your relationship with your partner during this period?
10. What changes did you notice in your relationship with your partner during this period?
11. How did your normal roles and routines change during this period?
12. What was your perception of or attitudes towards, the post-expedition experience?
13. What changes in sociability have you noticed in yourself during this period?
14. What changes in sociability have you noticed in your partner during this period?
15. Describe any changes you have noticed in your partner's work habits.
16. Describe any changes you have noticed in your own work habits.
17. What assistance was available to you from your partner's primary employer following your partner's return home?
18. What assistance did you require after your partner returned home?
19. Would you be happy for your partner to consider applying to go to the Antarctic again?
20. Do you think the introduction of air-based personnel movement is a positive or negative development? Why?



## APPENDIX I

Stepwise Regression Equations Predicting Positive and Negative Change at Two Months Post-RTA (Reunion) for Single Expeditioners, Partnered Expeditioners, and Partners

Table 40

*Stepwise Regression Analyses of Factors Predicting Positive and Negative Change at Reunion for Single Expeditioners*

Dependent variable	Independent variable	Beta	SE	<i>p</i> value	Adjusted R <sup>2</sup>
CiOQ Positive	FFSS Purpose reunion	3.25	.69	<.001	.84
	Internal WIF pre-departure	.81	.36	.03	
	HSCL Total month 5	-.76	.12	<.001	
	PD month 4	1.01	.25	<.001	
	PD month 1	-1.16	.31	<.01	
	COPE Restraint	1.05	.39	.02	
	COPE ISS	.88	.41	.05	
CiOQ Negative	PD month 1	3.01	.43	<.001	.68
	FFSS Flexibility reunion	.89	.21	<.001	
	Internal FIW reunion	2.11	.88	<.01	
	SD month 2	.77	.63	<.01	

Note: CiOQ=Changes in Outlook; Internal WIF= Internal Work Interference with Family; PD= Performance Difficulties; COPE ISS= COPE Instrumental Social Support; Internal FIW= Internal Family Interference with Work; SD= Somatic Distress.

Table 41

*Stepwise Regression Analyses of Factors Predicting Positive and Negative Change at Reunion for Partnered Expeditioners*

Dependent variable	Independent variable	Beta	SE	<i>p</i> value	Adjusted R <sup>2</sup>
CiOQ Positive	COPE Restraint	7.43	.68	<.001	.94
	HSCL Total reunion	-3.01	.35	<.001	
	FFSS Balance pre-departure	-2.10	.91	.03	
CiOQ Negative	COPE Active	-12.36	.88	<.001	.94

Note: CiOQ=Changes in Outlook.

Table 42

*Stepwise Regression Analyses of Factors Predicting Positive and Negative Change at Reunion for Partners*

Dependent variable	Independent variable	Beta	SE	<i>p</i> value	Adjusted R <sup>2</sup>
CiOQ Positive	FFSS Expectations reunion	3.69	.57	.001	.95
	Internal FIW reunion	1.25	.25	<.01	
CiOQ Negative	FFSS Flexibility pre-departure	-2.13	.33	<.001	.87
	GFD month 2	-1.16	.10	<.001	
	SD reunion	-.62	.44	<.01	
	FFSS Commitment reunion	-.98	.76	<.01	

Note: CiOQ=Changes in Outlook; Internal FIW= Internal Family Interference with Work; GFD= General Feelings of Distress; SD= Somatic Distress.

**APPENDIX J**  
**Reintegration Interview Schedules for Expeditioners and Partners**

## INTERVIEW SCHEDULE FOR EXPEDITIONERS

### Post-expedition (12 months post-RTA)

21. Describe the positive aspects of the post-expedition period.
22. Describe the negative aspects of the post-expedition period.
23. What feelings and emotions did you commonly experience during the post-expedition period?
24. What was the least stressful time for you during this period?
25. What was the most stressful issue for you following your return home?
26. What factors helped you to cope following your return?
27. What factors do you believe helped your partner/family/friends to cope during this time?
28. What social supports did you access during this period?
29. How would you describe your relationship with your partner/family/friends during this period?
30. What changes did you notice in your relationship with your partner/family/friends during this period?
31. How did your normal roles and routines change during this period?
32. What was your perception of or attitudes towards, the post-expedition experience?
33. What changes in sociability have you noticed in yourself during this period?
34. What changes in sociability have you noticed in your partner/family/friends during this period?
35. Describe any changes you have noticed in your own work habits.
36. How would you describe your general level of satisfaction with your time at the Antarctic?
37. What assistance was available to you from your primary employer following your return home?
38. What assistance did you require after returning home?
39. Would you consider applying to go to the Antarctic again?
40. Do you think the introduction of air-based personnel movement is a positive or negative development? Why?

## INTERVIEW SCHEDULE FOR PARTNERS

### Post-expedition (12 months post- RTA)

21. Describe the positive aspects of the post-expedition period.
22. Describe the negative aspects of the post-expedition period.
23. What feelings and emotions did you commonly experience during the post-expedition period?
24. What was the least stressful time for you during this period?
25. What was the most stressful issue for you following your partner's return home?
26. What factors helped you to cope following your partner's return?
27. What factors do you believe helped your partner to cope during this time?
28. What social supports did you access during this period?
29. How would you describe your relationship with your partner during this period?
30. What changes did you notice in your relationship with your partner during this period?
31. How did your normal roles and routines change during this period?
32. What was your perception of or attitudes towards, the post-expedition experience?
33. What changes in sociability have you noticed in yourself during this period?
34. What changes in sociability have you noticed in your partner during this period?
35. Describe any changes you have noticed in your partner's work habits.
36. Describe any changes you have noticed in your own work habits.
37. What assistance was available to you from your partner's primary employer following your partner's return home?
38. What assistance did you require after your partner returned home?
39. Would you be happy for your partner to consider applying to go to the Antarctic again?
40. Do you think the introduction of air-based personnel movement is a positive or negative development? Why?

**APPENDIX K**  
**Stepwise Regression Equations Predicting Positive and Negative Change at 12 Months**  
**Post-RTA (Reintegration) for Single Expeditioners, Partnered Expeditioners, and**  
**Partners**

Table 43

*Stepwise Regression Analyses of Factors Predicting Positive and Negative Change at Reintegration for Single Expeditioners*

Dependent variable	Independent variable	Beta	SE	<i>p</i> value	Adjusted R <sup>2</sup>
CiOQ Positive	FFSS Balance pre-departure	-2.26	.23	<.001	.94
	PD month 2	.73	.14	<.001	
	FFSS Appreciate reunion	3.65	.37	<.001	
	WHO Environment reunion	.13	.03	<.001	
	COPE Religion	-.44	.11	<.01	
	PGI	.21	.12	<.001	
CiOQ Negative	GFD month 5	1.98	.23	<.001	.94
	FFSS Purpose pre-departure	2.75	.54	<.001	
	WHO Physical pre-departure	-.27	.04	<.001	
	External WIF reunion	3.63	.45	<.001	
	FFSS Positiv. pre-departure	-4.41	.59	<.001	
	COPE Denial	.99	.22	<.001	
	FFSS Info. Share reunion	-2.12	.33	<.001	
	FFSS Comm. pre-departure	2.10	.50	<.01	
	SD reunion	.79	.20	<.01	
	FFSS Commitment reinteg.	1.82	.48	<.01	
	FFSS Expect. reinteg.	-1.16	.40	.01	

Note: CiOQ=Changes in Outlook; External WIF= External Work Interference with Family; PD= Performance Difficulties; PGI=Personal Growth Initiative; GFD=General Feelings of Distress; FFSS Positiv.=FFSS Positivism; SD = Somatic Distress; FFSS Expect.=FFSS Role Expectations.



Table 44

*Stepwise Regression Analyses of Factors Predicting Positive and Negative Change at Reintegration for Partnered Expeditioners*

Dependent variable	Independent variable	Beta	SE	<i>p</i> value	Adjusted R <sup>2</sup>
CiOQ Positive	FFSS Positiv. reunion	4.56	.88	<.001	.64
	External WIF pre-departure	.74	.27	.01	
	HSCL Total reunion	-.27	.11	.02	
CiOQ Negative	FFSS Expect. pre-departure	-8.56	2.03	<.001	.38
	FFSS Positiv. pre-departure	4.08	1.58	.02	
	SD reunion	-1.40	.65	.04	

Note: CiOQ=Changes in Outlook; FFSS Positiv.=FFSS Positivism; External WIF=External Work Interference with Family; FFSS Expect.=FFSS Role Expectations; SD=Somatic Distress.

Table 45

*Stepwise Regression Analyses of Factors Predicting Positive and Negative Change at Reunion for Partners*

Dependent variable	Independent variable	Beta	SE	<i>p</i> value	Adjusted R <sup>2</sup>
CiOQ Positive	GFD reunion	-1.62	.23	<.001	.90
	CiOQ Neg. Change reunion	.53	.15	.01	
CiOQ Negative	FFSS Cope 1 reunion	3.41	.24	<.001	.96
	CiOQ Neg. Change reunion	.51	.06	<.001	

Note: CiOQ=Changes in Outlook; GFD= General Feelings of Distress; FFSS Cope 1= FFSS Avoidance Coping.